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IMMUNITY THE FUNDAMENTAL PRINCIPLE UNDERLYING ALL TREATMENT OF TUBERCULOSIS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June, 7-10, 1898.

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The principles underlying the treatment of disease have in the past been matters of speculation only. What was known to do good had been found to do so empirically, and was handed down from one generation to another in the most dogmatic way. With the birth of the germ theory of disease speculation gave way to exact science, and it became possible to base plans of treatment upon rational theories. In the light of the germ theory of disease, immunity becomes the fundamental principle underlying all treatment of those diseases which are due to living organisms. The usefulness of a plan of treatment must therefore be predicated upon what it will contribute toward maintaining or bringing about immunity.

Certain axioms can be formulated out of our present clinical and laboratory knowledge of germ diseases. These are: 1. That all germ diseases are due to parasitic life of living organisms. 2. That there is in all living organisms an inherent power of protection against parasitic life. 3. That the power inherent in the human organism protective against disease, is potent in direct ratio with normal physical development and normal standard of health. 4. That a proper soil for a given disease germ must exist in a prospective host as a pre-requisite for the establishment of the disease. 5. That the soil necessary for the subsistence and development of any given disease germ in a host may become exhausted. 6. That the normal physical development and normal standard of health with the consequent relative resisting power to disease, are closely related to nutrition in the individual, and in the ancestry from which the individual has sprung. 7. That congenial soil for a disease and inherent resisting power to it, may both exist in their fullest intensity in the same individual at the same time.

Of no germ disease have we, probably, as exact and intimate a knowledge as of tuberculosis. We can therefore lay down the following additional axioms about it as a basis of treatment: 1. That tuberculosis is essentially a local disease, and as such is slow in exhausting the soil in the host in whom it colonizes. 2. That tuberculosis, as a disease in its complete symptom-complex, is a series of colonizations, each colonization, in the complete cycle of its existence, constituting a minor attack. 3. That each colonization which runs its course, leaves the system of the host less competent to battle against a subsequent attack. 4. That every successive colonization is more extensive and more devastating than the preceding one. 5. That when a colony has been established, cure can only take place either through phagocytic powers of the blood by destruction of the bacilli before the circulation has been cut off from the deposit, or through defensive powers of the system by necrosis and ejectment of the mature bacilli, or by encapsulation. 6. That during the process of necrosis and ejectment of the mature bacilli re-inoculation may take place.

Upon the general and special axioms here laid down, the scientific treatment of tuberculosis must be based, and the fundamental principle that grows out of them is that immunity must constitute the basis of all treatment.

Immunity to disease is a freedom from liability to disease, because of an innate or acquired condition of the system, which is inimical to the development of the disease. In other words, it is an uncongenial soil for the germs which produce the disease. For the proper understanding of what is meant by immunity, it is first necessary to get a clear conception of what constitutes soil. Soil is a complex condition having both a positive and negative qualification. It may be a condition of the system in which disease germs find something in the blood or tissues upon which they can luxuriantly feed and prosper; or it may be a condition of the system, in which there is lacking something in the blood or tissues, which if it were present the germs could not obtain a foothold. Immunity being conditioned upon soil is therefore of a two-fold nature: 1, natural immunity, and 2, artificial immunity. Natural immunity is that condition of the system in which there is something present in the blood or tissues which inhibits the colonization of disease germs; in other words, it is the innate resisting power to disease. Artificial immunity is that condition of the system in which the specific pabulum for the disease germs has been taken out of the blood or tissues, either by a prolonged resistance to implantation of the germs, or by a successful struggle through an actual colonization of them. Immunity is not a fixed absolute condition, but varies from a slight temporary resisting power to an absolute permanent impediment to disease.

While tuberculosis subscribes to the general laws which govern germ diseases, it differs somewhat from most germ diseases in the matter of immunity. With such diseases as smallpox, scarlet fever and measles, natural immunity is weak, and a single attack of the disease is likely to establish absolute and permanent artificial immunity; with tuberculosis natural immunity is strong, but artificial immunity is exceedingly difficult to establish. Natural immunity from tuberculosis is, however, not possessed by all races and peoples, nor even by all families alike; races that have

not been exposed to the disease, such as the colored race in the interior of Africa at the present day, and the native races of America before its settlement by Europeans, do not possess it at all; country people possess it in lesser degree than city people; and some families are absolutely devoid of it. This difference may be explicable upon the theory that strong natural immunity really may be artificial immunity gradually acquired through long exposure to the disease by races, peoples or special families. As a rule natural immunity from tuberculosis goes hand in hand with normal physical development and a normal condition of health, and this is true to a much greater degree of tuberculosis than of most germ diseases. Complete artificial immunity is very seldom attained, although a very high degree of artificial immunity may be reached by certain families. Artificial immunity in the individual is sometimes acquired in bone tuberculosis and possibly also in glandular tuberculosis. The reason why complete artificial immunity is so seldom attained is, because when the disease is once established, the natural immunity or resisting power of the person affected gradually gives way and becomes exhausted before artificial immunity can be established. That there is, however, a tendency in every case of tuberculosis toward the establishment of artificial immunity can not be doubted, for we have evidence of it not only in the gradually increasing chronicity of the disease, but in the degeneracy of the tubercle bacilli as the disease advances. Could the natural immunity of the individual be maintained at a normal standard, a very large number of cases would undoubtedly recover, as artificial immunity would ultimately be acquired and the germs would no longer find congenial soil for the establishment of new colonies. There are really very few cases of tuberculosis in which recovery does not take place from the first attack, and in many cases complete restoration to health follows a second, a third, and even a fourth attack; but unfortunately after each attack there is lower physical tone—a lower natural immunity, and recovery is slower and less complete, with the chances of ultimate permanent recovery greatly diminished.

In the treatment of tuberculosis the great and important object should be the maintenance of natural immunity and the establishment of artificial immunity. Everything possible should be done to maintain the normal standard of health, first by preventing the waste of force, and secondly by stimulating the organs which have to do with nutrition. To prevent the waste of force it is necessary to suspend all activity over and above that which is necessary for a normal circulation and the proper action of the emunctuaries. Over-work among the poor, and over-exercise among the well-to-do are serious impediments to recovery. There is a popular idea, shared by too many physicians, that tuberculosis is due to inactivity of the lungs, and that the natural remedy is a great deal of out-door exercise. The mischief caused by this erroneous idea is beyond calculation. As well might one expect a typhoid fever patient to recover under a régime of hard labor, as a person suffering from tuberculosis while pursuing an active career. Absolute rest is the proper treatment in all cases of tuberculosis so long as there is marked variation of temperature and excitability of circulation. Not only will the resisting powers of the patient be conserved by such treatment, but the nutritive powers of the system will be greatly increased. Loss of weight will cease, appetite will improve, digestion will grow better and the general condition of the patient will show marked improvement after a few weeks' rest in bed. When the acute symptoms have subsided and the circulation approaches a normal condition, passive exercise may be taken with benefit. Watchfulness should, however, be maintained, so that even passive exercise may be suspended the moment evidence of disturbed circulation reappears. Not until the circulation becomes normal, and all evidence of activity of the disease has disappeared, should fatiguing exercise be permitted. There is no rule of practice of greater importance to the welfare of the patient than this; for a single fatigue may be the turning point in the case from the road to recovery to the road to fatality.

By advocating rest and partial inactivity during the convalescent stage I do not wish to be understood to favor indoor life or to oppose open-air treatment. On the contrary, I deem it of the greatest importance that even in the most acute stage pure, fresh air be supplied to the patient night and day, and that the whole mode of life be regulated with this end in view. There is nothing inconsistent, however, between the ideas of absolute rest and plenty of fresh air, for such rest can be secured even in the open air if necessary, and can always be had in well-ventilated rooms. Sleeping-rooms should be kept well ventilated night and day, and where they can not be properly heated the patient should be sufficiently protected by clothing to permit of thorough flushings at frequent intervals. The ideal treatment for tuberculous subjects is really only attainable in sanatoria, where everything can be so planned that patients may spend most of their time out of doors even in the acute stage of the disease; where the sleeping-rooms can be well ventilated, and where the physical exercise can be regulated to suit the requirements of each case. In home treatment we must do the best we can, but with the two ideas of rest and plenty of air always in mind and as the basis of every plan of treatment and every act of life.

Next in importance to preventing the waste of force, is stimulating the nutrition so as to make up for the ravages of the disease. Tuberculosis being a parasitic disease, and one which usually attacks some important part of the machinery of the body concerned in nutrition, there is bound to be a loss in nutrition and a deterioration from the normal standard of health. In proportion as this loss can be repaired will treatment of the disease be successful. In this connection the close relationship and interdependence of the respiratory and digestive tracts in the function of nutrition and their common government by the pneumogastric nerve must be ever kept in mind. As this nerve supplies both the lungs and the stomach, an embarrassment to the lungs is bound to prove an embarrassment to the stomach. In treating tuberculosis of the lungs the most constant attention should therefore be given to the stomach, and every weakness and incapacity anticipated. By reason of nervous inhibition and perverted nervous function growing out of the diseased condition of the lungs, appetite is often wanting, or a morbid craving for food, which, if taken, will prove injurious, exists. Want of appetite and morbid cravings of food must therefore not be heeded, but a liberal and judicious feeding must be pursued. An ample supply of easily digested food at frequent intervals will probably give the best results. The largest amount of nutrition

with the smallest amount of labor to the digestive tract should be the golden maxim by which every article of diet is judged. Artificial aids to digestion, both in the stomach and in the intestines, can always be employed with advantage. Great care should be exercised in giving drugs, such as alteratives and cough medicines, by the stomach, for the purpose of influencing the course of the disease. The good that may be accomplished with such drugs is more than counterbalanced by the impediment to nutrition which they bring about and the consequent deterioration in natural immunity. There are many drugs, such as strychnia, alcohol, cod-liver oil, hypophosphites, mercury, the mineral acids and the vegetable tonics, which may be used to advantage for maintaining natural immunity. They should, however, all be used with care and only when indicated for a specific purpose. Animal and vegetable ferments, such as pepsin, pancreatin and diastase are likewise most useful remedies for this purpose when judiciously used.

In the matter of artificial immunity we seem to be at the dawn of a great day. Much can already be accomplished with the methods and remedies at our command, but what we can do now is merely a foreshadowing of what is to come. In the past, climate has been our chief resource as a means for the attainment of artificial immunity. With a better knowledge of tuberculosis and more careful observations of the results of treatment, a change seems to be coming over medical opinion as to the value of climate as a therapeutic agent. Personally I have long since abandoned the idea that there is any specific power in climate over tuberculosis. That climate may contribute something to the maintenance of natural immunity I have no doubt; but as between the advantages to be derived from the best climate and those which accrue to the average patient in comfort and nutrition at home I believe the preponderance to be on the side of home. Whatever advantage there may be in climate will only be attainable to the majority of persons suffering from tuberculosis when sanatoria have been established in appropriate places to which patients can either be admitted free or upon payment of nominal board.

There has been much disappointment in the serum treatments. They one and all aim to establish artificial immunity and thus to bring about a cure. Personally I have had no experience with any of them and I am therefore not in a position to speak of them with authority. I have, however, read all the literature upon the subject within my reach and have kept close watch upon reports of cases treated with animal immunizing agents of any kind. I believe that all contain some merit, and in the hands of the proper persons are legitimate therapeutic agents. I have not used them because of lack of intimate knowledge of them, and also in part because of diffidence inspired by conflicting reports about them. That their genesis is upon correct principles, however, I am thoroughly convinced, and I look forward with great anticipation to the discovery of a specific remedy along the lines upon which they have been worked out.

Of drugs that have the power of contributing to the establishment of artificial immunity we have at least two that are worthy of confidence. These are iodin and creosote. In my opinion iodin approaches nearest being a specific for tuberculosis of all agents now known. That it is an absolute specific where it can be properly applied I am certain, but the great difficulty lies in the application. I have for many years obtained the most decided results by daily inunctions with a solution of iodoform or europhen in oil. The virtue of these drugs lies undoubtedly in the iodin, and the mode of action appears to be the production of nascent iodin in the blood by the decomposition of the iodoform and europhen, and a consequent inhibition of the tubercular process. The treatment is successful in proportion to the incipiency of the disease and the integrity of the circulation throughout the deposit. Of incipient cases that I have treated nearly all have recovered, and of advanced cases many have shown remarkable improvement and some have recovered. The reason why incipient cases recover so much more readily than advanced cases is because after necrosis has begun in a tubercular deposit medication through the blood is no longer possible, and the only hope of recovery lies in the prevention of new deposits. And here the importance of artificial immunity as a factor in the treatment of tuberculosis becomes evident. In proportion as artificial immunity can be attained the chances of reinoculation grow less; and if absolute immunity can be established recovery is assured. Iodin might possibly give this absolute immunity could a method be devised of keeping the blood thoroughly under its influence until all danger of reinoculation has passed.

Creosote is undoubtedly also a most valuable immunizing agent in the treatment of tuberculosis, and stands a close second to iodin. It must, however, be used in very large doses to get the full effects of which it is capable. A dosage of fifty drops of pure beechwood creosote three or four times a day ought to be reached. This amount can easily be given if the dose is gradually increased and copious liquid vehicles, which in themselves are not prejudicial to the stomach, be used. Hot water is probably the best vehicle in which it can be given, but milk is sometimes preferable. When milk is used the drug should be given after meals, so as not to interfere with the appetite. Wine, alcoholic beverages, and oils are objectionable vehicles, because they may prove embarrassing to the nutritive process and can not well be taken in large enough quantities to properly dilute the creosote. With the special preparation of creosote I have very little experience.

LIFE HISTORY OF BACILLUS TUBERCULOSIS IN ITS RELATIONS TO THE TREATMENT BY TUBERCULIN.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., July 7-10, 1898.

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It is said by Hirsch that about one-seventh of the mortality that exists among civilized men is due to tuberculosis in its various forms; and when we consider the dreadful mortality due to this group of diseases, there is rather a remarkable fact that confronts us in studying the life history of the tubercle bacillus, namely, that it is apparently, when compared with many other species of bacilli and bacteria, very much less virulent and deadly.

Let us compare for a moment the tubercle bacillus with the Klebs-Loeffler bacillus of diphtheria. The tubercle bacillus, it is true, can be inoculated on raw

and cut surfaces, but only with great difficulty and under exceptionally favorable conditions which aid in its development. Even when it does develop under favorable conditions of soil and habitat, its powers of growth and multiplication are slow and feeble, when compared with many other pathogenic micro-organisms. Compare this tardy process with the furious onset and virulence of the Krebs-Loeffler bacillus in a case of malignant diphtheria; the ghastly rigor followed by the burning fever and the septic infection produced by the absorption into the system of the poisonous toxins elaborated by these bacilli. As the case of diphtheria goes on the glands of the throat become swollen and often purple in color, showing the still greater contamination of the tissues; and as death approaches the blood loses its coagulability and in fact resembles greatly the disorganized blood found in the veins after death from snake bite. Tuberculosis, on the other hand, is comparatively slow and insidious in its progress. There is also a marked difference to be observed in the organs attacked by tuberculosis in children, as compared with the same disease in adults. In the former, tuberculosis commences usually in the glandular system, and the caseous glands may infect the adjoining organs, lungs, etc., by direct infection, or may set up a condition of general miliary tuberculosis. In adults, on the other hand, in an enormous preponderance of cases the disease tends to localize itself in the lungs, and the digestive system and the glands are much less frequently involved. The infection caused by the bacillus tuberculosis in adults is, there can be no doubt, produced by these micro-organisms lodging in the nasal cavities, pharynx, trachea or lungs. In children the infection is more general and very often seems to enter by the intestinal tract.

The comparatively slow development of tuberculosis is of great utility to the physician and enables him to adopt measures of prevention that in many other diseases would be quite ineffectual. It is a proposition that scarcely admits of argument, that when the tendency to tuberculosis is hereditary, and more especially when it prevails among the relatives of both parties desiring to marry, such unions should, as far as it is possible to do so, be prevented; unfortunately, however, the advice of the physician is often never asked, and if asked is still oftener disregarded. While it sometimes occurs that women who are suffering from pulmonary and other forms of tuberculosis do bring forth and suckle children who are apparently healthy, yet the best authorities condemn the practice, as likely to be dangerous to both mother and child. In these cases it is advisable to at once secure the services of a healthy wet nurse. If the pecuniary circumstances of the parents render this impracticable, then the infant should at once be placed upon the use of sterilized cow's milk, properly diluted and slightly sweetened. If the quantity of casein in the cow's milk causes indigestion, the excess can be removed by coagulating with pepsin or pancreatin and filtering through a piece of lace net. In regard tc the various kinds of infant foods so largely used in this and other countries, in my opinion they are utter abominations, and their use is responsible for the deaths of thousands of children annually. Mother's milk is the perfect type of food for young infants, therefore all our efforts should be directed, in feeding these children who can not obtain their natural nourishment, to giving them as close an imitation as possible. The basis of all the so-called "infants' foods" is starch, which is not found in mother's milk, and requires for its proper digestion an action and such an activity of the digestive function of the small intestines as is not often to be found in young infants.

As has been before mentioned, the infection of tuberculosis in infants and young children, more often take place through the glandular system of the intestines than through the mucous surface covering the respiratory apparatus. This fact emphasizes the importance of most carefully scrutinizing the milk supply and the cattle whence the milk is procured, in order that no tubercular infection may be incurred from that source. I am inclined to look also with considerable mistrust on the common practice of feeding young infants with scraped raw beef, believing it to be possible thereby to infect young children with tuberculosis, not to mention the possibility of other parasitic diseases, as for example, trichinosis. As the infant grows and develops into the child new sources of infection for the development of tuberculosis are found to exist in the glands, so abundantly to be found on the surface of the respiratory mucous membranes.

The crypts and follicles of enlarged tonsils form a nidus and resting-place for the retention and development of tubercle bacilli; the same may be said of adenoid growths in the vault of the pharynx, and of a catarrhal condition of the mucous membranes of the throat or nasal passages, whether produced by the above-mentioned or other causes. This chronically inflamed condition of these mucous membranes (commonly called catarrh) I believe to be a powerful predisposing cause of pulmonary consumption. Another reason why enlarged tonsils and other growths in the pharynx should always be removed, is that they in great measure prevent the proper development of the chest and lungs. In all cases of chronic catarrh I believe it to be of the utmost importance to insist upon the habitual and thorough cleansing of the nasal and post-nasal cavities with antiseptic solutions. If this is not done the secretions of the part become more or less putrid, the resisting power of the blood serum of the organs on which we depend for the destruction of these and other pathogenic micro-organisms become weakened or destroyed and the body is thus rendered an easy prey to whatever poisonous germ may be able to find entrance.

As will be readily understood from the previous part of this paper, the preventive treatment of this dread disease is by far, I believe, the most important. Cases of this disease are, however, ever present with us, and the momentous question then presents itself: What are the principles of treatment that should guide the physician in the management of cases of tuberculosis? The best answer to be given to this, therefore, will probably be found by making another inquiry, viz.: How are cases of tuberculosis (more especially tuberculosis of the lungs or pulmonary consumption) spontaneously or by medical aid cured? That these cases are cured is proven by the universally admitted fact that a large proportion of cadavers of persons who have died from many different diseases of the respiratory organs have, on postmortem examination shown indubitable evidences of having at varied periods of their lives suffered from tuberculosis of the lungs. Dr. J. Hughes Bennet, in his classic work, "Clinical Lectures on Medicine," says (p. 680) that the spontaneous arrest of tubercle in its

early stages occurs in the proportion of from one-third to one-half of all the individuals who die after the age of 40. The observations of Roget and Boudet, made at the Saltpetriere Hospital in Paris, among the individuals who were generally above the age of 70, showed that from one-half to four-fifths of such persons had recovered from tuberculosis. As the larger proportion of these cases never received any medical treatment for their tubercular disease of the lungs, it must be perfectly apparent that the fluids or tissues of the body must have the power to destroy and render inert these poisonous micro-organisms. Where does this power reside? Metchnikoff thought he had discovered the answer when he elaborated the doctrine of phagocytosis, or the destruction of bacteria and other micro-organisms by the leucocytes or white corpuscles of the blood. Nutall, Buchner, Nissen, Lubarsch, and in this country, T. Mitchell Pruden and many others, have shown conclusively, however, that the power of destroying the bacteria, etc., resides not in the leucocytes, but in the blood serum. This preservative power of the blood serum also explains why it is that the human body is able to resist the destructive action of the innumerable poisonous micro-organisms which continually surround us. They exist in every breath of air we draw, in the articles of food we consume, and in much of the water we drink. Uncounted myriads of them are to be found in the digestive apparatus of persons who seem to be in all respects perfectly healthy. Professor Buchner of Germany states the time usually required for one microbe or germ to become two, by the process of division, is fifteen minutes. At this rate it is computed that a single microbe would produce in twenty-four hours a million million million times the present human population of the earth. Professor Law, in a paper published recently in the *Pharmaceutical Era*, estimates that a single bacterium dividing and redividing would produce in forty-eight hours, if undisturbed, 281,500,000,000, which in bulk would fill a half-pint measure—all produced in two days from a germ measuring the 1/150,000 part of an inch. Pathologic bacilli are just as numerous where found, and divide as rapidly. Professor Bollinger states that a cubic centimeter (about one-fourth a fluid dram) of phthisic sputum (from a case of pulmonary consumption) contains from 810,000 to 960,000 tubercle bacilli. In an ordinarily copious expectoration the consumptive patient deposits nearly a million bacilli into his cup, and in an ordinary day he throws thirty or forty millions of these micro-organisms into the world. Then, at a low estimate, 10,000 tuberculous patients now living in New York City daily expectorate some 300,000,000 tubercle bacilli.

There exists, however, two conditions which have a most powerful effect in increasing or diminishing the power of the blood serum to destroy these poisonous micro-organisms. The first of these here to be mentioned is the high or low conditon of the health of the individual at the time of receiving the infection. If the individual is in a high state of health, his blood serum is then capable of destroying an immense number of these pathogenic organisms, and he is thus rendered immune to the disease.

Let us apply, then, the lesson to be drawn from the above-mentioned facts to the principles to be observed in the treatment of tuberculosis. Patients with tuberculosis can be cured when seen in the early stages of the disease and when they can be placed under proper conditions of hygiene. We enjoin perfect cleanliness; we direct that they shall receive an abundance of easily assimilated and nourishing food; we send them away from the vitiated and impure air of the city to breathe the pure and reviving air of the country; we give them cod-liver oil, tonics, the preparations of iron, iodin and its compounds, beechwood-tar creosote, with now and then a little codein or morphin to allay the cough and procure sleep. This is not a long list of remedies, and in it there is nothing new. One fact to be noticed is that all the remedies which the experience of ages has taught us to be useful in tuberculosis are reconstructive medicines which tend to build up the body and improve the health. The second condition which greatly influences the fatality of tuberculosis as well as that of every other infectious disease due to the presence of poisonous micro-organisms, is that the deadly effects produced depend upon the number of bacilli introduced into the body at the time of receiving the infection. Experiments upon animals with many varieties of poisonous bacilli show a very close analogy to the phenomena produced by other poisons; such, for instance, as opium, etc. If the dose of the poisonous bacilli is large, the animal dies; if it is small, his blood serum may destroy this limited number and he may recover. How then can we diminish this number of these bacilli in the immediate vicinity of our patient and thus prevent him taking into his system a deadly dose of these poisonous germs? The answer presents itself at once: Send your patient immediately to the seashore or country; still better, if his means permit of it, send him to the great table-lands of our country west of the Mississippi, to New Mexico or to some parts of Calfornia. He will come back to you perhaps in a year or two so changed and improved in physical appearance that you will scarcely recognize him. Above all things never send your consumptive patient to a sanitarium or a health resort, for if you do you have sealed his fate.

A great deal can be done to prevent the further infection of your patient, by the scrupulous disinfection of the sputum and its prompt destruction. Paper boxes for receiving sputum can now be procured for a trifle; these with their contents should be burned daily, thus removing at least one source of contagion. Tubercle bacilli in abundance have been found in the dust of rooms occupied by tuberculous patients, so the room should be as thoroughly cleansed and disinfected after occupancy by consumptives, as after having been used by patients suffering from any of the so-called contagious diseases.

It is needless to dwell upon the stupendous failure of the lymph from which so much was hoped when it was introduced to us by the illustrious Robert Koch. It is perhaps presumptuous in me to have an opinion on a matter that belongs so especially to those who have made bacteriology a special study, yet I can not help expressing a conviction that we can not expect as much benefit as we hoped we would receive from these investigations. It seems to me that such laborers are working in a wrong direction. Since the world began tuberculosis has always been cured in one way, namely, by improving the hygiene or general health; and how the injection into the system of a concentrated extract of the poisonous materials elaborated by the bacilli can do this I am unable to discover. I had the opportunity of studying the effects

of the hypodermic injection of the lymph sent by Robert Koch to this country. My limited experience of its use leads me to believe it a most energetic and poisonous fluid, and one that is much more likely to injure than to benefit patients who are suffering from tuberculosis. Other observers have had also very unfavorable experience with the new Tuberculin R. of Professor Koch, as will be seen from the following taken from the *Medical News*, March 19, 1898, p. 378:

The last two meetings of the hospital staff of the Charité (which constitutes a sort of medical society with bi-weekly meetings) have been occupied with a discussion of Koch's new tuberculin—tuberculin R. In April it will be year since the authoritative publication of the new method and announcement of the remedy. Some definite conclusions, it would seem, might be reasonably expected. The drift of opinion was all against the tuberculin R., and most of the clinicians did not hesitate to compare it to the old tuberculin in its effects, and some of them in its possible dangers. Dr. Huber, an assistant in Professor Leyden's clinic, has attempted to immunize animals in the way in which Koch immunized the animals which served as the basis for his conclusions in his last communication, but utterly failed. The experiments seem to have been carefully carried out, the dosage of tuberculin was exact and sufficient and the observations numerous enough to do away with the idea that perhaps coincidence played a rôle in the results obtained. Yet he failed to get the desired immunity. The full details of the experiments are to appear in the next number of the *Zeitschrift für klinische Medizin*, of which Professor von Leyden is the principal editor. After supposed immunization all the animals died when inoculated with tuberculous material, and interestingly enough, most of them before the control animals inoculated with the same material at the same time.

In Professor Leyden's clinic there has been absolutely no success with the new tuberculin. Patients acquire an immunity to reaction from the tuberculin itself, but no curative effects on tuberculin deposits have been noted. At times some improvement occurred, but there never was complete disappearance of any physical signs of the disease which had been previously noted. In patients with fever even Koch himself does not recommend it, and there is no doubt that it can and often does do harm in such cases.

Non tuberculous patients may react to even small doses of tuberculin R., so that the employment of any such reaction as a sign of the presence of a tuberculous process in a given case is said here to be utterly delusive. The conclusion of the experience in the medical clinic is that it is not a specific. Therapeutically it is no better than other forms of treatment which are not near so costly and not near so worrying to the doctor; for in no case can this treatment be employed except under a doctor's immediate supervision. These conclusions are shared by the workers in Professors Gerhardt's and Senator's clinics.

Even Professor Fränkel, the throat and nose specialist, who, on the strength of some lupus and laryngeal cases in which at first improvement seemed very rapid, was for some months an advocate of the new treatment, now admits that it is practically no better than many other forms of treatment for these affections, that it often fails to produce a change in the course of the disease, and never produces radical cure. Only Professor Briger, Professor Koch's assistant in the Institue for Infectious Diseases, makes any claims as to the value of the tuberculin treatment. The history of the second tuberculin forms an interesting commentary on the enthusiastic reception of the first. Here it has had practically the effect of destroying faith in all so called specific remedies for tuberculosis. Constitutional treatment, especially such as can be given in favorably situated, specially arranged consumption hospitals, is now the only method receiving any attention.

Another and a very serious objection to the use of tuberculin R. for diagnostic purposes arises from the fact that many people have encapsulated tubercular bacteria in the apices of their lungs, which are for the time being harmless. If we inject the tuberculin R. and obtain the reaction characteristic of tuberculosis we may awaken to activity these dormant germs and thus aid in poisoning the system of our patient instead of promoting a cure of his disease.

While wishing most heartily, therefore, that the results of the injections of tuberculin R. should have aided in destroying the most dreadful disease that afflicts humanity, yet we feel compelled to say that we have little hope of the cure of tuberculosis by this means.

ANTISTREPTOCOCCIC SERUM.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Serum therapy has afforded a large field for speculation and exploration, and the achievements in it have marked an era in medicine. The brilliant success of antidiphtheritic serum have assured us of the practicability of this mode of treatment in bacterial diseases, and we are justified in the hope that like results will be obtained in many or all diseases of this character. It now remains for us to determine the bacteria which produce a given disease and provide a suitable medium for their cultivation, and the proper organisms for the production of antitoxins, and we may hope for a specific agent in the disease in question.

The task here briefly laid out is by no means an easy one. All diseases are not of bacterial origin. Again, the most virulent microbes do not always stand artificial cultivation without deterioration, and the tolerance or natural immunity in species or individual animals makes it no easy task to produce antitoxins of a given standard. We are all cognizant of the work that is being done with the various antitoxins and are often surprised and disappointed because the results have not been so certain as in diphtheria. Nevertheless, much has been accomplished, and the finer problems are being worked out one by one. Advancement along this line is sure and certain, and the time is not far distant when other antitoxins will stand shoulder to shoulder with that of diphtheria and command the respect and attention of the medical profession for the results achieved. To Marmorek is due the credit for the original work in antistreptococcic serum, but Dr. Charles C. McClintock of Detroit has carried on the work in this country so admirably that we have an American product which is as good as is possible under the existing conditions of our knowledge of this subject. He, like other experimenters, has found it difficult to maintain pure cultures without deterioration. This has been overcome in a large degree by inoculating rabbits and other susceptible animals with large quantities of pure culture, and in such rapid succession that a virulent culture is produced. Having thus obtained a powerful toxin, a suitable animal must then be procured for inoculation. This is somewhat of a difficult task, as in all of the domesticated animals there is the personal equation to be accounted for. We all know that in man certain individuals are far more susceptible to streptococcic infection than are others. This is also true of the horse. The thoroughbred is not available, because of cellular degeneration due to inbreeding. The animal dies, not because of his particular susceptibility, but because of the inability of the cells to produce a suitable antitoxin. Again, the scrub is not available because of his tolerance, and a sufficient reaction does not take place to pro-

duce a standard antitoxin. Dr. McClintock was obliged, therefore, to select by experiments individual animals which had the power of producing a suitable serum. Recently he has carried on his experiments upon asses, and he believes them to be much more uniform in their susceptibility to streptococcic infection and capable of producing a more uniform antitoxin than the horse.

The animal selected is now inoculated with filtered cultures. Having thus obtained a slight immunity, he is next inoculated with pure cultures, the vitality of which have been impaired by heating. The virulence of the cultures is now gradually increased at each injection until he is able to withstand, with little or no reaction, large quantities of pure cultures of the most virulent type. This procedure occupies a period of time of from one to two years. The blood is drawn off and the serum is gathered and prepared in the same manner as for diphtheria antitoxin. Another difficulty now confronts us in the standardizing the antitoxin. This is usually accomplished by first determining the fatal dose of the toxin upon a given animal. Other animals of the same species are now injected with a great many times the fatal dose, and at the same time with a given quantity of the antitoxin. By continuing these experiments it can be determined to what extent a given quantity of the antitoxin will immunize the selected animals. Up to the present time this has not been accomplished because of the difference in susceptibility of different animals of a species to streptococcic infection. However, in a general way this has been accomplished, inasmuch as animals which have been inoculated with this toxin have died, while others of the same class and inoculated with large quantities of this toxin have been saved, or their lives prolonged, or their symptoms ameliorated by the use of antistreptococcic serum.

The practical work of this serum has not been confined to the laboratory. It has been largely used upon human beings, and while the results have not been uniformly good, there have been enough successes, and brilliant ones, to commend it to the profession for their careful consideration and approval. Marmorek used it with great success in curing forty-five out of forty-six cases of erysipelas (*Therapeutic Gazette*, 1898, p. 114). Dr. Chantemasse has collected statistics respecting the treatment of erysipelas, both by the old symptomatic treatment and the new antistreptococcic; the mortality in the former was 3.79 and in the latter 2.59. Gauchez (*Therapeutic Gazette*, 1898, p. 1159) records the case of an infant six weeks old with erysipelas which started at the umbilicus and became general. After the usual line of treatment had been resorted to for fifteen days, the child gradually becoming worse, antistreptococcic serum was used, and after the first injection the temperature dropped two degrees. The child continued to improve and was cured.

A case of puerperal fever treated with antistreptococcic serum with happy results is reported in the *Lancet*, 1898, p. 779. Fraser notes a case of puerperal septicemia which was much modified after the injection of this serum (*Lancet*, 1898, p. 496). MacNalty (*British Medical Journal*, 1898, p. 85) records a successful cure of puerperal peritonitis with the serum. In the *British Medical Journal*, May 15, 1897, Watson Cheyne gives results of treatment of operation involving subsequent sepsis, where antistreptococcic serum was used with good results. He advises the injection after operation as a prophylactic against septic processes. A. Knyvett Gordon (*Lancet*, 1897, Vol. 1, p. 34) reports a case of rapid improvement due to its use in scarlet fever. In this case the child was to all appearances dying from septicemia; he was semicomatose, with failing heart. After one injection he rallied, and after the second rapid improvement took place. Dr. A. W. Russell, at a meeting of the Glasgow Obstetrical Society held Feb. 24, 1897 (*Lancet*, 1897, Vol. 1, p. 813), reported a case of puerperal toxemia with symptoms of mania in which he had used antistreptococcic serum and recovery had followed. Dr. Guttman of Detroit had in his practice recently a case of general erysipelas which showed favorable results within a day after the injection of antistreptococcic serum. The fever and local inflammation at once began to decline and the patient was cured. The Doctor stated that he had exhausted every means known to him, but without any effect until he was advised to use the serum treatment. A case of acute otitis media cured with antistreptococcic serum is recorded in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION Feb. 6, 1897, p. 272.

Reporting a case of septic absorption following the operation of oöphorectomy cured by the use of the serum, Dr. Scott McGregor (*British Medical Journal*, 1897, Vol. 2, p. 805) says: "I am inclined to believe that the recovery which resulted in this case, and with the small quantity of serum used, was due in a great measure to the prompt use of the serum at an early stage of the disease." Mr. Stephen Paget read a paper on cases of blood poisoning treated with antistreptococcic serum, and gave the general results of treatment up to the present time. He said that the four diseases in which the serum had received a fair trial were scarlet fever, puerperal fever, erysipelas and poisoned wounds. He presented statistics showing the great advance in reducing the usual frequency and fatality of the complications of scarlet fever, preventing suppuration, causing the throat inflammation to subside and in checking delirium.

My personal attention was attracted to serumtherapy as a cure for streptococcic infection some three years ago, when treating a case of inoperable sarcoma with Coley's toxins, when I completely immunized my patient against streptococcic infection. This demonstrated to me the feasibility of procuring an antistreptococcic serum, but having no laboratory of my own in which to produce the serum, I was obliged to wait until it was put on the market. At an early date I procured some made by Parke, Davis & Co. and commenced experimenting with it.

While thus engaged I was called to see a lady 71 years of age, of rather feeble constitution, who was suffering from a violent attack of facial erysipelas, the infection having taken place in a small fernicle in the nose. The disease spread with frightful rapidity, extending to both sides of the face, closing the eyes, and involving the ears. The attack was so violent that one could see the invasion of new tissue. The temperature reached 104, pulse 140, the patient having all the symptoms of severe septic intoxication. I sterilized my field of injection between the shoulder blades and injected 10 c.c. of Parke, Davis & Co.'s antistreptococcic serum, which was all I had with me, and telegraphed them for more. This was at 2 P.M. In a few hours the patient became quiet, the pulse became slower and the temperature dropped 2 degrees. At 4 A.M. the following day the patient called the

nurse and told her she felt perfectly well. The tenderness had entirely left the face, the toxic symptoms had subsided and the pulse and temperature were nearly normal. At 8 P.M. the patient had a chill, which was followed by another exacerbation of the disease. The heart was overpowered and showed signs of extreme intoxication. The disease extended into the meatus of the ear, the temperature reached 103.5, which was followed by a mild delirium. At 1 P.M., the serum which I had ordered the day previously having arrived, I again injected 10 c.c. with most happy results. Within two hours the heart was again beating naturally and the symptoms gradually subsided. In twelve hours the temperature was normal, the pulse only slightly accelerated and the tenderness all gone. I then injected 5 c.c. as a prophylactic against further exacerbation and in twenty-four hours I again repeated the dose. The patient made an uneventful recovery, desquamation taking place within twenty-four hours from the last injection.

Within a few weeks I was called to attend a woman suffering from puerperal fever. From the clinical picture presented, as well as from facts surrounding her confinement, there was no question in my mind as to the diagnosis of streptococcic infection. Her temperature was 104.5, her pulse 150. She was a young woman of robust constitution, and afforded an excellent opportunity for the demonstration of the efficacy of antistreptococcic serum in this type of puerperal infection. Ten c.c. of Parke, Davis & Co.'s serum was injected, which was repeated in twelve hours. In twenty-four hours from the second injection the patient was absolutely well, no indications of the previous infection being in any way manifest. I have used the serum in a number of cases with results varying in direct ratio to the positiveness of my diagnosis. In all cases where I knew that the infection came from the streptococcus erysipelatus, the results were uniformly good.

Dr. Madden handed me the following report of a case which he exhibited before the Milwaukee Medical Society:

L. A. M., 40 years of age, subject to repeated attacks of facial erysipelas during the past four or five years, has had eight attacks of considerable severity. The disease generally began on some point of the face and extended over the whole head, on two or three occasions involving the neck and one shoulder. The length of these attacks varied from fourteen days to two and a half months. About February 1 a characteristic attack began on the right ala of the nose, extending upward and backward over the right cheek. The patient applied for treatment on the second day of the disease. At that time the parts bore all the characteristic signs of erysipelas. On the morning of the third day 10 c.c. of Parke, Davis & Co.'s antistreptococcic serum was injected in the subcutaneous tissue between the shoulders. Two hours afterward the patient declared that he felt relieved. In twenty-four hours the activity of the disease seemed to have completely ceased, and in forty-eight hours desquamation had begun. The progress of the case from this point was uninterrupted until complete recovery.

In conclusion, I would say that, owing to the fact that this serum has not yet reached a state of perfection and can not as yet be accurately standardized, we are apt to meet with some failures and be subjected to some disappointments in its use. A great many diseases of mixed origin are supposed to be benefited by this serum, but the results of its use must be determined by the extent to which the streptococcus erysipelatus infection acts as an etiologic factor in the disease. Any disease which is caused by streptococcic infection is certainly benefited, if not cured, by antistreptococcic serum. Serum which is reasonably fresh and hermetically sealed, having been properly prepared and properly inspected, is never an element of danger and may be used with impunity, in reasonable quantities, where the diagnosis is not clear, but where streptococcic infection is suspected.

SOME OBSERVATIONS ON THE AURI ET SODII CHLORIDUM U. S. P.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June, 7-10, 1898.

BY DANIEL R. BROWER, A.M., M.D., LL.D.

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CHICAGO.

Auri et sodii chloridum is a mixture of equal parts of dry gold chlorid and sodium chlorid. It is very soluble in water and very easily decomposed by sunlight and organic matter. This drug is tonic, alterative, bactericidal, and antiseptic. It acts on the digestive tract, in small doses improving the appetite, stimulating the functions of the liver and stomach, promoting assimilation and general nutrition. The larger doses continued produce epigastric pain, nausea, and anorexia. Still larger doses produce violent gastro-enteritis without ulceration and salivation. Six and a half centigrams (gr. 1) have produced these symptoms in an adult, and this same dose has produced death in a dog in four minutes.

In anemia, in small doses, it increases percentage of hemoglobin and the number of red blood corpuscles; on the nervous system, in small doses, it is a cerebral stimulant, making the mind more active, and often inducing in the mentally depressed a sense of cheerfulness; upon the spinal cord it acts as a stimulant. In man it acts as an aphrodisiac, and in woman it augments the menstrual flow. In large doses it produces paralysis of the central nervous system, first in optic lobes and cerebellum, then in spinal cord, and then in cerebral lobes. In medicinal doses it increases urinary secretion and the percentage of urea. In large doses it will produce renal hyperemia and albumin in urea

The bactericidal and antiseptic powers have recently been investigated by Prof. L. Hektoen, at my suggestion, and he writes as follows:

May 26, 1898.

Dear Doctor:—Sternberg, in his Manual of Bacteriology, made the following statement of the bactericidal and antiseptic properties of chlorid of gold and sodium:

	Destroys.	Restrains growth.
Anthrax bac.	1:8000	1:40,000.
Diphth. bac.	1:1000	1:40,000.
Bac. glanders	1:400	1:15,000.
Bac. typhoid	1:500	1:20,000.
Spir. Asiatic chol.	1:1000	1:25,000.

I have had the necessary experiments repeated by Mr. Danielson, who finds that with our cultures the above figures hold good with the bacillus of diphtheria and typhoid fever as to bactericidal powers, but that the dilutions mentioned do not destroy the other germs mentioned. He found that growth was delayed by the dilutions of Sternberg in the second column.

Yours sincerely,

L. HEKTOEN.

Shoemaker (Materia Medica and Therapeutics, 3d, Ed., p. 226), quoting Calmette, says that it is antidotal to the poison of the cobra de capello. Gibbs and Shurley (*Therapeutic Gazette*, April 15, 1891) demonstrated its bactericidal power against bacillus tuberculosis: First by inoculating guinea pigs and a

week afterward treating them with auri et sodii chloridum, limiting the lesion to the seat of the inoculation; second by putting healthy animals under treatment for one or two weeks before inoculation, and thereby preventing in these even the formation of an abscess at the seat of inoculation.

The elimination of gold and sodium chlorid takes place principally by kidneys and, to a small extent, by liver and bowels. There is an astonishing amount of skepticism in the profession as to this drug. Some of this, at least, arises from the fact that it is very unstable, being readily decomposed by light and organic matter. Sufficient care is not exercised in its combination with other drugs, or too large a quantity is ordered, so that decomposition has taken place before its ingestion, or its administration is not properly timed, so that destruction takes place in the stomach. The best vehicle with which to combine it in capsule is tragacantha or guaiac resina; neither of these decomposes it. The time for administration should be one hour after eating, or, better still, one hour before eating. The ideal method for administration is by hypodermatic injection, the solution used being made with equal parts aqua destillata and glycerina.

Syphilis.—The remedy is useful in syphilis, especially in those cases in which the iodid and mercurials do not agree, or in which there is a great amount of debility. Dr. E. F. Ingals (Diseases Chest and Throat, page 448) recommends it in syphilitic laryngitis. M. Martineau (*Bull. et Min. de la sac, de la Therap.*, April 30, 1883) recommends it in cases of inveterate syphilis. One of his cases, a woman in an advanced state of cachexia, broke her fibula, probably because of specific change in the bone. Though rebellious to other treatment, she recovered quickly and the fracture united readily under gold treatment. W. Hale White (Mat. Med. and Therap., Wilcox, 2d Ed., p. 187) says it is a valuable remedy in the tertiary manifestations of syphilis, especially of the bones, and presents fewer disadvantages than does the corrosive mercuric chlorid. Shoemaker (Mat. Med. and Ther., 3d, Ed., p. 226) and Potter (Mat. Med., Pharmacy and Therap., 3d Ed., p. 123) both emphatically endorse it for the treatment of syphilis in its later manifestations.

The drug is useful in the treatment of connective tissue hyperplasia, as in cirrhosis of the liver, interstitial nephritis, arteriosclerosis, and the spinal scleroses. Millard (Bright's Disease, p. 220) writes: "The chlorid of gold has proved of great value in interstitial nephritis. Under its use I have often known the albumin to diminish and disappear;" and again, "At all events its usefulness in chronic nephritis has sometimes been unmistakable, and it is likely to prove still more useful if the patient suffers, as is usual, from nervous symptoms, hypochondriasis, irritability, vertigo, etc." Bartholow (Practice of Medicine, p. 400) writes, anent topic interstitial nephritis: "Better results even, the author believes, are procured from the careful and persistent administration of the chlorid of gold, or of gold and sodium." Baumgarten (Reference Handbook Medical Sciences, Vol. iv, p. 282) writes (referring to Dana, *Boston Medical and Surgical Journal*, Oct. 24, 1883) under "Contracted Kidney": Marked improvement and mitigation of distressing nervous symptoms have been observed from the use of chlorid of gold and sodium (0.005=1/12 gr.) in pill after each meal. Culbertson (*Am. Jour. Oph.*, July, 1894) relates a case of albuminuric retinitis relieved by chlorid of gold and sodium. W. H. Walling (*Medical and Surgical Reporter*, Philadelphia, 1897, Vol. lxxvi), writing of sclerosis generally: "I will state my belief, founded on an experience of twenty years, that gold is far more efficient than any other drug I know of."

My first experience in the use of this remedy in interstitial nephritis was about fifteen years ago. The case came under my treatment because uremic symptoms had developed after severe exposure. When these acute symptoms disappeared he was given chlorid of gold and sodium, and he continued it in varying doses for five years, the albumin gradually diminishing and finally disappearing. Several examinations of the urine were made five years ago and no casts or albumin were found. I am sure that I have also repeatedly seen advantage from its use in the early stage of posterior and combined spinal scleroses.

Diabetes mellitus.—J. A. Robison (*Chicago Medical Recorder*, May, 1891) reports two cases of diabetes mellitus cured by its use. A recent communication from Dr. Robison informs me that these cases continue well and that an equally favorable result has been reached in other cases.

Functional diseases of the nervous system.—Niemeyer (Text Book Prac. Medicine, p. 386) writes: "I have accidentally hit upon a nervine of great efficacy in hysteria and have made use of it with signal effect in many cases." The formula he recommends is:

℞. Auri et sodii chloridi . . . . . 0.30 gm. (gr. v)
Gummi tragacanth . . . . . 4.00 gm. (dr. 1)
Sacch. alb. q. s. ft. in pil. No. 40.
Sig. Begin with two pills a day, increased to eight pills daily.

Mills (The Nervous System and its Diseases, p. 238) writes: "Sodium and gold chlorid, although it has attained an unmerited reputation in some directions, is a valuable tonic, and I not infrequently use it in the treatment of hysteria and other affections."

My personal experience is in accord with these great clinicians, and I especially desire to emphasize its value in that complexus of symptoms called neurasthenia.

Tuberculosis.—Gibbs and Shurley (*Therapeutic Gazette*, April 15, 1891) report twenty-seven cases of pulmonary tuberculosis treated with the drug, used hypodermatically, in doses 0.003 gm.—.001 gm. (1/20 gr.—1/6 gr.) during three to eight months, with gradual disappearance of temperature and cough, increase in weight, and disappearance of bacilli. Pepper (Univ. Med. Mag., December, 1895) reports a case of phthisis apparently cured by the use of this drug.

GOLD CURES IN INEBRIETY.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY T. D. CROTHERS, M.D.
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Any remedy introduced, surrounded by mystery and sustained by falsehood and deception, is unworthy of notice. Yet a number of physicians have expressed confidence in the value of gold as a remedy, both in inebriety and allied brain affections. This theory has been recognized by reputable druggists, who have prepared several preparations of gold for administration chiefly by the needle. The empiric prepara-

tions called "gold cures" whenever analyzed are found to contain no gold whatever. The assertion that no chemist can ever make an analysis of such preparations is absurd. As a medicine gold has been rarely used by the regular profession. In the first century of the Christian era Pliny mentions it only to doubt its value unless taken with large quantities of drink, which destroys its potency for evil. The Arabian physicians for hundreds of years mentioned gold as an elixir of life, believing it of value in renewing youth and prolonging life. This doubtful theory continued and appeared in old works of chemistry down to the last century. No one made a test of it, but simply repeated it in terms of vague doubt. The alchemist charlatans have always been defenders of gold as a remedy. It is a curious repetition of modern experience that at least three much vaunted remedies contained no gold at all. In 1540 Gallus, a physician of Paris, claimed to have a gold cure for syphilis and gave the formula an impossible combination. Glaser, a London doctor in 1663, claimed to have a diaphoretic powder of gold for intermittent fever. This was equally fraudulent and no gold was found in the preparation, although it was used for many years with great popularity. From 1725 to 1780, Lamotte's gold drop was famous throughout Europe and was called a tincture of gold, but contained no gold. Neuman wrote nearly two hundred years ago: "Gold has been held to be possessed of extraordinary medicinal virtues, and many preparations dignified with the name of this precious metal have been imposed on the public, but the virtues ascribed to gold have apparently no other foundation, than credulity and superstition and most of the golden remedies have no gold in them." Even when gold has been employed in their preparation none of it is retained in the product.

Gold is non-assimilable, and its modern use is confinded to quacks who trade on the name. The modern craze for gold as a remedy is simply a repetition of charlatans' schemes of the past centuries, who sought to meet and supply the demand for elixirs of life, renewing youth and postponing old age. Croll, a German physician in the sixteenth century, mentions over a hundred different preparations of gold; each if made by the formula would be absolutely free from gold. This was illustrated in the modern gold cures, which from their names were found to be chemic impossibilities. Their value in inebriety depends on credulity. A yellow mixture of some vegetable extracts injected in the arm, followed by general relaxation and diaphoresis so profoundly impressed the inebriate chemist that he has ignored all teaching and experience for the belief that the hidden virtues of this drug have been discovered and will revolutionize pharmacy in the future. I have tried three of the known preparations of gold made by reputable authorities, on cases of inebriety, with no results whatever. When strychnin, cinchona and other remedies were given, associated with gold, the effects were marked. The same results followed when gold was not used. Infusion of cinchona in large doses at frequent intervals resulted in rapid subsidence of the drink craze and a distaste for both the flavor and effect of spirits. Injections of gold were not noticeable for any effects on the taste or desire for spirits. By impressing the mind of the patient with profound conviction of the value of the drug, and detailing the expected results which would follow, and by using colored water the exact effects would appear. In some cases this impression is so powerful as to materially change the disease. Supposing gold to be used, it must be combined or given with some other drug of pronounced effect on the body, or preceded by expectancy and credulity, to be followed with any results. This would be the same in any other disease of the body; to specialize any effects from the drug alone would be impossible. Inebriety is more than alcoholism; it includes disorders of which the desire for spirits is only a symptom. The real trouble is some central disease of the brain so complex and obscure that no drug or therapeutic agent can reach it specifically. For a quarter of a century a great variety of remedies have been used in inebriety, with the same results as in all other empiric efforts to reach an unknown disorder by remedies whose action was largely unknown. Some drugs like strychnia have some influence in checking the drink symptom, but beyond that nothing is known.

Gold, whose effects are unknown and even to its defenders are surrounded by mystery, can not possibly be of any service in checking an unknown disorder. Its use must be empiric and irrational always, except as a mental remedy to influence the mind. Experience indicates that it is extremely doubtful if any remedy exists for this obscure neurosis of the brain. Combinations of therapeutic measures are valuable and their action marked in many cases, but no single drug can have any curative influence. The checking of the drink symptom is the same as using opium for pain, leaving the cause uninfluenced. On general principles, gold or any single drug can have no specific influence in cases of inebriety and all specifics—either single remedies or combination of remedies—are fraudulent and empiric. Inebriety is not reached by drugs alone or special, concealed plans of treatment. It is a neurosis to be treated as other affections of the brain and nervous system. Even under the most skillful care, with the best appliances known to science, it is often incurable and only temporarily influenced by therapeutic measures. The degenerations which precede and follow the use of alcohol are organic changes of cell and nerve tissue, and restoration is problematic, depending on causes and conditions largely unknown, therefore, the discovery of a remedy to check decay is impossible with our present knowledge of medicine. It will require a century of study and experiment before we can speak positively and authoritatively on the pathology and therapeutics of inebriety. Yet a number of men are confident that drugs are found—or will be soon—to cure and restore the inebriate to health again. This expectation is met in the gold cures, where color and price are accepted as evidence. This, with the hysterical assertions of cure and statements of health, reiterated with great positiveness, becomes a mental contagion difficult to resist by unstable defective alcoholics. The acceptance of this testimony by persons not inebriates is ignorant credulity difficult to explain. Why gold should have any influence in these complex drug neuroses, and not in the more common affections is a mystery; why the use of gold should be confined to irregular and doubtful practitioners is also a mystery. Why should gold be wanting in the preparations said to contain it? Even when present, its combination with powerful drugs makes it difficult to know the value of any one of them, unless the physiologic effects of that drug appear.

A physician who reported ten cases of inebriety

cured from the use of gold used barks and strychnia freely at the same time, and yet seemed to think the action of gold was prominent. Another physician used colored water injection as gold and impressed the mind of the patient with the certain effects which would follow. The drink craze subsided and the patient recovered. In many cases under my care, who have been cured in the gold-cure asylums at different times, there is concealed periodicity. The drink symptom is limited, and disappears naturally both with and without drugs. Such cases always make rapid recovery from the use of any drugs, and assert their final cure most positively. They pose as examples and illustrations of the effect of remedies, and the medical man becomes bewildered with the faith of a new discovery of some new effects of drugs. If it is gold or any unusual medicine, he is more convinced. These cases continue cured for irregular intervals, then relapse again and after a drink paroxysm of uncertain duration recover. The first subsidence of the drink storm makes them willing to be treated medically. Or when forcibly taken away and put under treatment they suddenly acquiesce, and after the first few days recover, no matter what is given. This is popularly called the sobering-off process, and in all the quack asylums is limited to four weeks. It is not scientific treatment, but a mere preliminary to the full restoration, which only comes from months and years of medical care. The use of gold in this period would not be a final test, and its virtues could not be known from its supposed effects at this time. There is no gold cure for inebriety. There are no facts to show that gold has any value in this disease. All the assertions and statements concerning gold as a remedy are delusions, and will not bear the test of critical examination.

THE TREATMENT OF INSOMNIA.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1897.

BY ROBERT T. EDES, M.D.

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Insomnia is, of course, only a symptom but, like many other symptoms, it occasionally stands alone as representing some functional disturbance of which we have no other means of information. When we speak of the treatment of insomnia as such, we ought not to include the treatment of the pains or discomforts from various known sources which may keep the patient awake, or of many forms of insanity, of delirium tremens or other kinds of poisoning.

This narrows our limits very much, but at the same time makes the problem more precise. The practitioner or writer, however, does not get rid of its difficulties by these exclusions, for many of the cases which present no other important symptoms, so that the patient has nothing to tell as to his bodily condition except that he can not sleep, are more difficult to manage successfully than one where we can put a finger on some definite disturbance that is a sufficient cause. For the treatment of insomnia does not consist in making a patient sleep for one, two or a dozen nights by the use of drugs, but in getting his brain into such a condition, with or without drugs, that he goes through the normal, regular alternations of sleep and wakefulness, of cerebral activity and repose, without special assistance but simply as a part of the physiologic functioning of the brain.

The first thing then to be done when one applies for the relief of insomnia, is to determine whether it is insomnia at all in this narrower sense: that is, whether it is not possible to find a cause in some irritation outside of the brain, some disorder of the digestive or circulatory system, some accidental disturbance, which prevents its coming to its normal rest, or whether its abnormal activity is not the accompaniment or precursor of some more defined and perhaps serious form of mental disturbance. The expression sometimes used by patients, that they will go crazy if they can not sleep, is not always to be looked upon as a mere exaggeration, for although fortunately in the great majority of cases it is so, yet the possible warning should not be overlooked. If you find no such specific cause and ask the patient what prevents him from sleeping when the proper time comes, he is likely to answer, "I do not know. I simply can not go to sleep," or else, "I get to thinking and can not stop."

There is no theory of sleep which is thoroughly satisfactory, and it is by far the most probable that the changes in the cerebral circulation which have been observed are the results rather than the causes of diminished activity. Still, those theories which connect the varying conditions of sleeping and waking with the state of the blood-supply to the brain, or even to certain parts of it, and its control by the regulation of the quantity going to other parts or to other organs, make the most useful working hypothesis in many cases of insomnia. But it would be as absurd to expect it to cover all the ground and to stand the test of therapeutics in every direction as it would be to look for exactly the same conditions in every case of paralysis, or neuralgia, or tremor. That the surface of the cerebral hemispheres is usually in a condition of relative anemia in normal sleep and also, as a natural consequence, that other parts of the body and in particular the skin, as recently shown by Howell, are apt to contain more than the usual amount of blood, are tolerably well established facts. But congestion of the brain, although certainly not a condition of normal sleep, produces symptoms not very different from it, and on the other hand, cerebral anemia, whether as a part of general anemia or only local, gives rise to symptoms just as far from normal sleep as those dependent upon an opposite condition of the blood supply. It is probably just as true in insomnia as in many other visceral states, that the demands of the nervous centers regulate the supply of blood, rather than that their activity is dependent solely upon vasomotor conditions which are themselves independent of the needs of the tissues.

So far as the action of drugs may throw some light upon the relation of vascular tension to sleep, there is certainly an approach to the rule that many of those drugs which tend to relax it, like alcohol and chloral, are also under favorable circumstances, hypnotics, while those which raise the general tension, like the theine group and cocain, are decidedly promotive of wakefulness. But there are so many exceptions, and the hypnotic and vasomotor effects are sometimes so distinctly separate, that it is not very easy to suppose that the relation of causation is an invariable or very close one.

[NOTE.—A paper, of which this is to some extent a revision, was read to the Section on Therapeutics of the British Medical Association at Montreal and published in the British Medical Journal for Oct. 2, 1897, as having been read by Dr. R. Ferguson of Western University. The error was corrected in the index of the volume but, notwithstanding several notifications, not in the text of any succeeding number.]

Digitalis, which raises the general tension more persistently than almost any other drug, does not specially tend to wakefulness. The nitrites, which diminish it extremely and with a rapidity varying according to the basic combination, are not hypnotics, and in particular the amyl salt, which produces vasomotor paralysis with such extreme rapidity that we might reasonably expect it to be not merely a hypnotic but an anesthetic, has no such effect in its early stages when the paralysant action is at its height.

Aconite, which in poisonous doses is such an extreme paralysant of the circulation, is not a hypnotic. Even in the instances where moderate vascular relaxation and drowsiness are among the consequences of the action of the same drug, the relation in point of time may not be a close one. Chloral, which even in small doses is not only among the most certain but the most prompt hypnotics, produces an initial rise which does not pass into depression until a later stage or with larger doses. Alcohol, on the contrary, produces a speedy vasomotor paralysis of the superficial vessels, as may be seen in the flushed face and general moisture of the skin, at a time when the brain, especially in its motor functions, is in most rapid, if not most accurate, activity.

Of course, it is possible, by assuming in some cases an alternation of cerebral and general vascular tension and in others a coincidence, to reconcile some of these apparent contradictions with the general theory of sleep as due to cerebral anemia, but this assumption, which even if possible or probable is certainly unproven and capricious in its application, can not be regarded as at all satisfactory, Waking and sleeping undoubtedly indicate the normal rhythm of cerebral nutrition, the alternation of waste and repair in the nervous substance itself.

The rhythmic curve is a function of several variables and probably not identical in form in all individuals. One of the most important of these is undoubtedly the condition of the cerebral circulation as controlling the supply of nutritive material and also the balance of pressure between the blood and nervous protoplasm. Beside this, however, there are two laws of nervous activity, partly dependent on each other and partly opposed, which are probably not controlled by the condition of the circulation, at least, that is, when it varies only within the usual limits: 1, the tendency of nervous force to discharge itself along the same paths with constantly increasing ease, i. e., the formation of habitual associations of ideas and movements; 2, the tendency to rhythmic action, i. e., excess of expenditure over income during a certain time to be made up by accumulation during rest.

If we have the first of these, as applied to the attention or to some limited center of cerebral activity, gaining the ascendancy over the second, so that the action does not cease at the end of the proper time when the reserve of energy is running low or become transferred in a lower grade to some other region (sleep with dreaming), we have insomnia, which is only slightly affected by the condition of the blood supply.

In treatment of chronic insomnia, in the first place a normal and sufficient general nutrition is to be looked out for as the basis for normal cerebral nutrition, but this does not necessarily imply the stuffing process. A useful criterion is the body weight in reference to the height and usual or normal condition of the individual, and diet is to be regulated on this basis. Secondly, the distribution of the blood is to be equalized, with the balance however tending to anemia of the brain rather than the reverse, though by no means to the extreme. The derivation of blood may be accomplished by hot baths to the feet, or the lower half or even the whole body, emphasized if necessary by a little mustard. The well-known expedient of a small amount of easily digestible food just on going to bed or on waking up in the course of the night, probably acts to a considerable extent, at least, in the same way. The hot toddy, which also keeps coming up in the papers as a new discovery, adds to a slight direct narcotic effect the early vasomotor dilating action of alcohol.

Another illustration of the same influence is to be found in the intense drowsiness that comes over one who has been for a long time in the cold and who sits down in front of a cheerful fire, when the blood previously driven to the interior of the body flows outward again as the arterioles dilate.

Cold feet are often an accompaniment or partial cause of insomnia, and it is well to promote the circulation in them by a hot bath for five minutes, followed by a short cold douche and friction, rather than to simply attempt to warm them by hot bottles and the like. The cold pack is a more extensive application. Two methods described by Dr. McAllister at Montreal, as useful in the case of students unable to sleep while cramming for examinations, undoubtedly owe their power to the production of a general vasomotor reaction following the brief superficial application of cold. The first of these was the very simple plan of parading the room absolutely naked, and the second, wringing out the night-shirt in cold water and resuming it with the addition of a sweater.

There seems to be a certain medium degree of activity in the cerebral circulation necessary for normal sleep, and it might be expected that it would be so. On the one hand the production and discharge of nervous force, resulting in cerebral activity and wakefulness, can hardly be prevented while the neurons are being bathed by a rushing current of highly arterialized blood. On the other, sleep is not simply and solely a condition of exhaustion. It is the preparation for waking activity and the occasion in which the storage of potential energy for future use must for the most part take place. This of course can not be accomplished unless the cells have presented to them a supply of nutriment for building up again their wasted structure. The promotion of the general nutrition is of great value in the treatment of insomnia, especially of the chronic form. Sometimes it is sufficient without the introduction of any more specific measures in restoring the normal function. But while it is necessary that suitable nerve food should be prepared in due quantity and delivered, speaking both literally and figuratively, under due pressure, yet a third condition is quite as essential, namely, that the nerve centers themselves shall have the power properly to dispose of it, that is, absorb and store it. People lie awake when the extremities, the skin, the viscera, so far as any one can judge, are properly supplied with blood, and when everything seems conducive to its orderly distribution; everything, that is, except the condition of the brain itself. Either an excitement which can not be abated or an excitability which makes slight disturbances into great ones

drives away repose, and an active congestion is the result of the too long continued demand upon the brain, or, much more probably and usually, upon some quite limited portion of it which is the center of disturbance and prevents the repose of the whole.

A brain in perfect health arrives gradually at a condition of fatigue which more or less peremptorily compels sleep, and the more so the longer the period of deprivation. But sometimes the brain or some part of it does not follow the laws of fatigue and is capable of working, or rather insists upon working, in the same direction it was following when work should have ceased. The rate of production is undoubtedly low and in most cases, so far as any useful thinking is concerned, none at all, but the condition is not one of rest. It is much as we might imagine would be the case in a mill somewhat worn and with a water supply insufficient for continuous working, if the gate got out of order so that the pond could not fill up. Then a little stream of water, not enough to grind any corn, might keep the wheels moving and prevent proper repairs or the accumulation of enough power to do any good. The proper thing to do in such a case is obviously to fix the gate in complete order, but if this for any reason can not be done, it may be proper to stuff it full with something or other to save the water and stop the mill for repairs. When the current of wearing thoughts will not stop, we may occasionally stuff the gate with hypnotics.

Cases where sleeplessness results from adequate causes—pain, discomfort or extreme sensory irritation, bright lights, loud noises—are hardly to be reckoned true insomnia at all, but the line which separates the adequate from the trivial varies greatly according to the makeup of the individual, and in the same person at different times. The psychic element is very distinctly shown in the great diversity of effect produced by disturbances according to the mental attitude of the would-be sleeper. A noise which he considers perfectly legitimate or for which he feels no responsibility is much less likely to keep him awake than those which come closer to his sense of the fitness of things or his personal feelings, though in themselves no worse in respect to loudness or quality; like that of the absurd dog who bays the moon, or the neighborly cough for which he has himself prescribed ineffectually, or the single mosquito he has made up his mind to kill. This is not the same state of things as is investigated by the psychologists, who take the loudness of the noise (dropping of a ball) necessary to awaken the sleeper as a measure of the soundness of the sleep.

Cases have been observed where, several of the senses being wanting, a temporary stoppage of the channels of the remaining one has resulted in sleep within a few moments, but it is a very common observation that noises which are continuous and to which one has become accustomed, and for which he no longer waits, cease to have any effect upon a sleeper except on their sudden cessation, which then acts as the irritant. It is necessary to bring the *attention* to rest.

That a certain thin streak of waking consciousness may be made to run through the sleeping condition, perhaps always to some extent does so, is shown by the ease with which many persons can wake up at a predetermined hour.

It is probable that the sensible fatigue of mental labor depends not so much on actual cerebration, the association of ideas, as in forcing the work to continue in certain definite directions without regard to outside distractions. After a time this becomes more and more difficult, and stronger and stronger irritants are necessary to retain the attention. Thus we have under normal conditions the soothing effect of monotonous repetitions as of music, the prosy speaker, the more or less intentional hypnotist. In normally going to sleep the attention, either because too much fatigued to act longer or failing to receive adequate stimuli from without, ceases to exercise its control in co-ordinating the intelligence received from the special senses and from the various departments of the brain. Cerebration dissociates itself from the recent memory and from the data of sight, hearing and feeling, as they are rapidly becoming blunted. Definite thinking becomes dreaming. Probably every one has noticed in himself the process of going to sleep carefully enough to know that the rapidity of the coming on of full sleep varies greatly, and while one may, as the phrase goes, drop to sleep as soon as the head touches the pillow, there is usually an interval in which real impressions are mixed with the images of dreams, and even in quite sound sleep the current of the dreams is more or less influenced by bodily sensations. Attention should be withdrawn, if possible, from habitual disturbing and anxious thought, not just *at* bedtime, but *before* it, and the interval should be employed in some entirely different occupation.

True insomnia, as distinguished from an interference with sleep by special somatic causes, seems to consist largely in the attention refusing more or less absolutely to surrender its directing and controlling power over the action of the brain. Perhaps the associational centers of Flechsig may, by too long-continued and intense activity without rest, or a current of ideas confined within narrow and monotonous limits, get into a condition analogous to that of the motor centers in writer's cramp or chorea.

The products of a partially exhausted cerebral activity, which should be allowed to float vague and purposeless, calling for an expenditure of energy much less than the nervous tissue is capable of reacquiring during the same time, are still more or less held together and intensified, so that the potential energy of the nerve centers is drained away as rapidly as it accumulates, the output exceeds the income, the patient gets but little rest, and arises unrefreshed. It may be remarked, however, that the effect of two or three nights of this form of insomnia is less absolutely and thoroughly exhausting than the same period of enforced wakefulness under great pressure, as for instance, that of a sentry, a nurse, or an engine-driver working overtime, although the latter may occasionally pass into the former, as an acute disease into a chronic.

A purely experimental want of sleep produced by constantly waking the persons experimented upon, although to be sure assisted as far as possible by themselves, seems to have produced singularly little disturbance in nervous or cerebral function, and to have been recovered from with an amount of extra sleep much less than that lost, varying from 16 to 35 per cent.[1] In these cases, however, the mental strain in the form of anxiety or responsibility was almost *nil*, and it is not difficult to understand how the effect upon the reserve supply of nerve force may have been correspondingly less.

[1] G. W. Patrick and J. Allen Gilbert. Psychological Review, Sept., 1896.

A plan sometimes resorted to in desperation by victims of insomnia, that of producing great bodily fatigue, as for instance by a walk far beyond the usual habit or ability, is an extremely bad one and usually fails entirely of its object. As with the circulation, a certain medium degree of fatigue is required for the best kind of sleep, and if increasing the burden is to be of value, it must be shifted so as to moderately fatigue new portions of the brain, and not deepen the old ruts from which it is already too difficult to dislodge the current of the thoughts. Mere labor which fatigues the muscles without engaging the attention in something outside the fixed and disturbing current of associations does not fulfil this indication.

At Montreal, Dr. Learned of Northampton suggested successive series of slight movements of separate groups of muscles, raising the head from the pillow a certain number of times, then one arm, one foot, and so on, is much nearer to the object sought, since it requires a certain amount of mental effort and attention to carry out the plan properly, and when the proper point is reached the patient is already in bed to avail himself of it. Reading one's self to sleep with a suitable book is a common and commendable device. The book, however, is not a matter of indifference. It should not be at all in the direction of one's anxious daily occupations, nor sufficiently exciting to set up a train of thought intense enough to be itself a cause of wakefulness and, on the other hand, it must have enough interest to take the mind away from the previous one. Probably nothing could be more valuable and efficient, were it generally available, than music, which would, however, require a delicacy of adaptation to the individual case that would greatly interfere with its practical applicability.

The prescription most frequently made for chronic insomnia, and in most cases undoubtedly the best, is that of complete rest or a vacation, recommendations more easily given than taken. Absolute vacancy of mind is talked about but never artificially attained, and relief from mental activity means relief from the habitual train of thought, most probably of a depressing or anxious character. It is specially difficult to obtain the proper conditions at home or among familiar surroundings.

A vacation in the country, real country if it can be had, is by far the best method of getting the necessary diversion, but here also there is a choice. The disturbances which drive away sleep come from within, and the occupation of the vacation must be such as will displace morbid activities by healthy ones, not intense but sufficient to predominate. If the patient has nothing else to think about he will be sure to think about his troubles. Black care may sit behind the horseman or beside the lounger on the hotel piazza. Of course the morbid train of thought may be difficult or even impossible to displace at once, but life in the woods, with adventure enough to command the attention of the invalid in an entirely different direction, is as likely to do so as anything. The psychic as well as the physical atmosphere must be changed. A well-founded doubt as to whether the patient is going to find any place to sleep at all is a useful counterirritant to the harrowing dread that he may not sleep after he gets there.

In cases not insane, the haunting idea which stands in the way of satisfactory sleep is likely to be the fear that it will not come, or the feeling of doubt, anxiety and despair when it is long awaited in vain. Insomnia and the dread of it react to heighten each other's intensity. Under ordinary circumstances it is better that all thought in regard to sleep, even a slight expectation of it, should be banished from the mind, unless of course it be so firmly believed in that the element of doubt no longer exists. "Sleep, like the other gods, comes when we least expect him." When this idea has been banished a great step has been taken. Suggestion, as it is mildly called, not dependent upon hypnotism and varying from the gentlest of hints to the most positive asseverations, is by no means certain of ridding the patient of this dread, and it must very often be backed up with a dose of something. Patients, even when they are strongly suspicious, or even when it is acknowledged that the medicine ordered will not be a powerful one, are reluctant to have it omitted altogether and be left to their own resources.

A placebo or half placebo, as some of the mild hypnotics, and even some of the others when given in very small doses, may be called, ought always to have a reputation behind it, whether deserved or not, if there is any chance of the name becoming known, lest a highly intelligent patient, as such patients are apt to be, or an officious nurse, should look it up in a medical dictionary, which for practical purposes, whatever doubts may be justifiable from a scientific point of view, should give out no uncertain sound. Hence part at least of the value of lactucarium, lupulin and the hop-pillow. The knowledge that a powder is lying on the chimney-piece, or the assurance that a provisional order will be left on the night-nurse's book, has a tranquilizing effect highly desirable.

A graduated series of powders, with sugar of milk to maintain the bulk, and enough quinin to maintain the taste, beginning with a full dose of sulphonal and ending with none of it, is a convenient way of ridding the patient of the drug habit without the disturbing apprehension consequent upon the brusque statement that he must get along as best he can without any drug.

Hypnotics may be roughly divided into two classes: Those which diminish the nervous irritability which keeps the patient awake, and those which distinctly, though perhaps not profoundly, narcotize the nervous centers.

The most typic of the first class are the bromids, among which I have never abandoned my preference for the potassium salt as the most powerful, believing that the fear of any depressing effect of the basic element upon the heart is purely imaginary, at least in such doses as ought to be or are likely to be used in the treatment of insomnia. The bromids are better given in two or three doses during the latter part of the day, and in many chronic cases through the day, than in a single large one, although in my own person the latter plan has worked well also. In cases where a good deal of nervous excitability and restlessness during the day, "nervousness" par excellence, is added to the insomnia, a bromization lasting a few days or a week or two is occasionally admissible. The bromid of potassium, under circumstances demanding mental activity, even in considerable doses, is not a distinct hypnotic, although, when given in the way I have suggested, it will allow a patient to sleep if it does not make him do so. I think the same is true of its action when given with narcotics that are liable by themselves to produce an excitant effect. Opium or cannabis indica may be converted by it from an excitant to a sedative. I have taken a single dose of more than one hundred grains of bromid for the purpose

of having its effect on my retinal circulation examined by one of my ophthalmic colleagues, and then made my hospital visit without the consciousness of anything unusual in my mental condition, or any remarkable degree of somnolence perceptible, so far as I was aware, to my internes. Yet such a dose in the evening would have given me a quiet night if undisturbed, and I have no doubt, if I could have yielded to it, would have done the same thing in the daytime. Opium, with its alkaloid, morphin, the first of narcotics, notwithstanding its undoubted power, its traditional *vis dormitiva* and the fact that sleep usually follows a sufficient dose after a varying interval, is not a desirable hypnotic in the strict sense of the word. In small doses it is untrustworthy, in many persons having the reverse of the desired effect, while in large ones its disadvantages far outweigh its benefits. Where, however, the want of sleep is dependent upon pain, the case is entirely different. It would be peculiarly dangerous in a case of neurasthenia, and I can hardly think of circumstances which would justify its use in a case of pure insomnia. Cannabis indica is hardly a hypnotic at all alone, or at least takes a long time to produce real sleep, but often does well in combination with bromid. I have used it occasionally alone with good effect when the dreams were depressing or annoying with the result, or coincidence, of their changing their character for the better.

Chloral, I think, has gone largely out of use. Introduced as an anesthetic, then freely used in quite large doses as a hypnotic, it has been to a great extent abandoned for safer if less powerful drugs, and I judge from the catalogues of drugs given me by patients that my opinion of its danger and uncertainty is shared by other physicians, though under the misnomer of "bromidia," which seems to obscure even in the professional mind the exact character of the preparation, it often appears upon the list of the narcotic "fiend." Of the immense number of other hypnotics of recent introduction, mostly of coal-tar or alcoholic origin, each of which has in turn been brought forward as agreeable, certain and free from danger or disagreeable after-effects, I will only mention three.

I do not believe that the hypnotic is yet discovered or ever will be, which is at once trustworthy as producing the desired result and incapable of producing any unpleasant after-effects. Sulphonal comes as near to that standard as any drug with which I am acquainted, and used with care is little likely to do harm except that which attaches to any habit of the kind or dependence upon artificial aids to sleep. Nearly all, perhaps all, the cases, which, considering its widespread use, are not numerous, where dangerous conditions as evidenced either by hematoporphyrinuria or by long-continued subnarcotic effects have arisen, are the results either of doses singly too large or administered too close together, not allowing the blood to be free from it in the interval. The same remark might undoubtedly be made of other hypnotics. Its correctness may be shown by reference to the discussion at the Montreal meeting.

The tardiness and permanency of the action of sulphonal, undoubtedly a consequence of its difficult solubility and slow absorption, can not be looked upon as a disadvantage when properly allowed for. A second good night without a renewal of the dose, is by no means an exceptional occurrence even when the dose has not been excessive. It seldom fails in the dose of one gram if given well dissolved and early enough in the evening. In dose of thirty centigrams or less it is somewhat of a semiplacebo. The full dose should not be repeated on the same night, and it should not be given continuously, that is upon successive nights, for any length of time. If its use is to be prolonged beyond an emergency period of four or five days the interval should be more than forty-eight hours.

Trional is more soluble and rapid in its action, but seems to enjoy most of the advantages of sulphonal except the important one of having its effect last over two nights.

The peculiarities of each may be best utilized by reserving the sulphonal for a patient who has not slept for several nights and who, it is pretty clear, is not going to get a good night unassisted, so that the medicine may be given early, namely, at 6 or 7 P.M., in order that its effect may be developed at the regular time for going to sleep. Trional, on the other hand, may be kept for a case where sleep is likely to be well begun, but where it is likely to be broken off very early in the night and not renewed without a hypnotic. It is the preferable of the two for a provisional prescription, since the dose may be given at any time in the night necessary and the effect will not be too far distant. Paraldehyde is a rapidly acting and safe narcotic, probably coming much closer in its mode of action to alcohol than the coal-tar preparations. I have seen a case closely resembling a mild delirium tremens from the continued use of the drug in the hands of a patient not under professional care. The extremely disagreeable taste and smell may or may not be an advantage according to circumstances.

THE CONTINUOUS USE OF DIGITALIN IN THE VASOMOTOR AND CARDIAC LESIONS OF SENILITY.

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Senility embraces that period of life during which one or more of the functions, as well as nutritional metamorphoses, when compared with the manifestations of the vital unit possessed by the individual, are recognized to be prematurely waning, and thus many are the instances of men and women, who, being endowed with vital energy sufficient to enroll them among the normal activities of advanced being, remain more or less disabled or invalided because of this premature failure on the part of some special organ or system to adequately discharge function. This retrograde process has an insidious origin, manifesting itself much earlier in life than we are prone to imagine, and is primarily operative, as a rule, in the vasomotor system. This *great* system has *not*, as yet, received the attentive study it should, and its direct relationship to functional activity, whether it be of brain or special sense or organ, is such that it is not an exaggeration to state that life itself depends thereon.

Active nutrition, then, in the fullest sense of the term, is that condition which determines the normal relationship of function to vital unit and is intimately associated with the perfect fulfillment of vasomotor function, because the distribution of pabulum to each cell, organ and system is directly dependent upon the

physiologic integrity of this *nervo-sanguineous* system. The first physiologic symptoms of senility will almost always be found with some portion of the vasomotor system, and that which is most objective consists in preternatural fullness of the superficial veins. This condition is indicative of far more advanced, although not visible, alteration of the minuter radicals, both of the arterioles and venules, and when present for some length of time, is associated with the symptoms of diminished and impaired function; therefore, we have slight defects in intellection; the details of everyday life are forgotten, and the victim finds it necessary to utilize the "memorandum tablet," instead of relying upon memory. Sleep is less refreshing and is interrupted by slight insomnia. Some failure in vision and obtunding of hearing co-exist, while respiration is habitually augmented in rate, and the ordinary activities of life, formerly free from any sense of discomfort, are associated with more or less dyspnea. The digestive functions are all less active than before, and the disturbances especially noticeable are those accompanying passive hyperemia and the consequent diminished absorption. The disturbances of hepatic functions manifest themselves in paroxysmal headache and pruritus; the itching of the nose is especially noticeable, and is often contemporaneously present with similar annoyances, located in areas of the back and lower extremities. Emaciation, while not marked, is pronounced, and the usual rotundity characteristic of the vigor of life, gives place to the well-known diminution in weight and wrinkling of the skin.

The function of the sphincters, and especially the vesical, is markedly impaired and the passive hyperemia of the kidney gives expression to its existence by albuminuria and the shedding of casts. The group of symptoms just enumerated, if the condition is well advanced, frequently assumes the clinical picture of organic disease, and thus has the writer seen what he erroneously believed to be senile softening of the brain, presenting typical symptoms, as demonstrated by a failure to recognize the members of family, inability to realize living at home, and *re*-living boyhood life, totally disappear under the treatment to be described; a fact demonstrating that the failure of *functional activity* may be due, under these conditions, *not* to the death of the cell, but the absence of nutriment necessary to the maintenance of its vital phenomena. Of the cardiac conditions we have either fatty degeneration of the myocardium itself, cloudy swelling, or some type of retrograde change, either uncomplicated, which is exceedingly rare, or associated with gross lesions in the radicals and larger arteries. Indeed, the changes in the cardiac muscle are, in ninety-nine instances of the hundred, *secondary* to a *primary* lesion of the peripheral arterial system; this fact is worthy of especial emphasis and is to be considered in formulating a prognosis, other things being equal, of any given instance. Elsewhere will some facts associated with the physiology of the circulation be elaborated, and it will suffice in this connection to simply state that, in senility, the propelling power of the arterial system being diminished, by reason of its vasomotor factors, but capable of restoration to the percentage longevity of the vital unit involved, will result in the establishment of lost equilibrium. The symptoms associated with what has hitherto been considered "senile heart" are, habitually augmented rate, diminution of resistance and edema of the extremities; of course, with these we have the bronchial disturbances, the falsely called "asthma," and, in advanced cases, various forms of dropsy. The treatment of these cases with digitalis, alcohol, strychnia, strophanthus and nitroglycerin finds its limit of usefulness far down the scale of possible achievement, and the premature death of all such, so afflicted, has been the outcome of *secundum artem* methods.

It is taught, that in the condition just described, arterial tension is increased and, therefore, digitalis should not be employed, because of producing ruptures of the brittle and overfull arteries, and otherwise endangering the life of the sufferer. Careful study demonstrates that when the venous side of the circulation is tortuous and distended with blood, the arterial possesses *less* than its normal quantity, and while the aortic valves close with pronounced force, instead of being the result of *arterial tension*, this is actually dependent upon the *weight* of the column of blood, which not being propelled by what may be considered vermicular contraction, fills the non-elastic vessel as though it were an iron pipe; therefore, we have operative *weight* and not active force, and consequently *diminished* and not augmented arterial tension. What obtains in the aorta is an expression of the whole arterial vasomotor system and, consequently, we have this disturbed circulatory equilibrium, characterized by distended veins and relatively empty arteries. The cerebral phenomena so common in this condition manifest themselves in their worst type, by symptoms suggestive of apoplectic processes, and not uncommonly does the patient complain of localized numbness which, after a shorter or longer duration, culminates in confusion of thought, partial loss of consciousness, somnolency, confusion, loss of speech and transient paralysis of groups of muscles. This condition must not be confounded with true apoplexy, by which is meant rupture of a large arterial trunk, such as the middle meningeal or striate artery, because they are dependent upon either transient *ischemia*, that is, the terminal vessels fail to transmit blood to the part on account of the lack of propelling power, or to actual ruptures of venous radicals, directly due to the overdistention characteristic of the venous side.

A typical clinical illustration of an advanced case of senile cardio-vasomotor disease is that of an individual propped in a chair and completely disabled. For years nearly all of the symptoms briefly described have been gradually becoming more numerous and severe, until now he is distended with anasarca, the lower extremities ruptured and oozing serum freely, while the skin is red and glossy and the seat of ulceration. Respiration is imperfectly accomplished with constant effort, and is shallow and rapid, and the want of breath so marked that only a few words and disconnected sentences can be uttered at a time. The bronchial area is edematous and the lungs the seat of moist râles. Cough is persistent and exhausting, and sleep only indulged in for a few minutes at a time. The kidneys are almost passive, and only from two to four ounces of urine are secreted in the twenty-four hours. Exhaustion and distress are depicted on the countenance, but to the patient are not so keenly appreciable because of a partial obtunding of the brain. The cases from which this picture is drawn were the failures resulting from the *secundum artem* treatment, above mentioned, and although it is realized that the statement will be doubted, it is

asserted that several who, years ago, were advanced to the stage depicted, are today free from all of these phenomena and able to be about as old, but comfortable seniles. The continuous use of "digitalin" in doses sufficiently large to restore lost circulatory equilibrium, is the treatment which brought about these truly wonderful results.

A few words about "digitalin": Unfortunately, this term is applied to a product in the shops which represents a complex mass or glucoside composed of one or more of the following active principles contained in crude digitalis:

1, digitalein, a glucoside occurring as a white amorphous bitter powder, soluble in water and alcohol; 2, digitalin, a yellowish powder, soluble in alcohol, chloroform and 2000 parts of water; 3, digitalin German, really digitalein and an alleged inert crystallin derivative, known as digitin (this latter in a very small percentage); 4, digitonine; 5, digitalin kiliani, resolvable by treatment with acids into digitalose and digitaligenin; 6, digitalin crystallin, soluble in alcohol and ether; 7, digitalin purified, which contains, also, digitalein, digitonin and digitalin kiliani; 8, digitonin; and 9, digitoxin.

When a prescription is ordered for "digitalin," the question may well be asked, what is supplied? Each of these derivatives possesses especial therapeutic power, which it is not the province of this contribution to consider; therefore, with simply indicating why there is such diversity of opinion entertained concerning the value of so-called digitalin, attention is directed to the fact that that derivative, the use of which this paper is the outcome, is a so-called digitalin, known as *Digitalin German Merck. None other will effect the results set forth.* Its dose is from one-tenth to one-half grain, from three to six times daily, as the severity of case requires.

If instances of advanced disease are encountered, and dissolution threatens when first seen, one-half a grain is safely exhibited hypodermically, and repeated in one hour; after that, two grains additional are administered by mouth, in quarter grain doses every two hours, should the emergency require. This bold plan has, in the writer's experience, several times averted impending death, and enabled restoration practicable, When the circulation has been restored by two or three days' treatment, the advantage is maintained by just sufficient of the remedy to secure permanent results. Skillfully used, this is maintained, as the title implies, continuously. A gentleman who, last October, was in the condition described and dying, has taken daily ever since, two grains a day. He now walks to my office, a distance of more than one mile, and returns to his home without any inconvenience whatever. After observing the effects of this treatment for years, it can be confidently asserted that *no* hypertrophy of the heart follows; also, that sclerosis of the arteries, not an expression of calcareous infiltration or atheroma, but what may be viewed as an anchylosis, so to speak, frequently disappears.

This is due to the fact that the contraction and expansion essential to the calibrating function of the arteries being restored as a result of the action of "digitalin," normal functional activity and, consequently, nutrition of the coats is instituted; just as a stiffened articulation, by normal movements loses its rigidity, does an artery, similarly affected. The treatment must be practically continuous, because the senile changes having already become permanent are a constantly acting factor in the onward march. It must therefore be constantly held in abeyance and it can be, just as long a time as the life with which the vital unit of the individual was originally endowed.

RECOGNITION OF TEMPERAMENT: A FACTOR TO THE SELECTION OF REMEDIES AND THEIR DOSAGE IN DISEASE.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. E. MOSES, M.D.

KANSAS CITY, MO.

Temperament may be defined as that quality, made manifest by the physical and mental characteristics of man. There are four distinct types of temperament: The nervous, the sanguine, the bilious, and the lymphatic. To these I will apply the term primary, because they are the base of all the combinations or compounds met with in the majority of people. A pure type of any one temperament is not often found, and when it is the characteristics are very marked. For the purpose of my paper it is necessary that I describe each temperament separately, and then take up the various compounds as they present themselves. Before taking up this description, I would state that I shall differ from all the authors that I have been able to consult, in that I shall consider, not only the skin, the eyes, the hair, and the contour of the face as they do; but also the brain, the respiratory apparatus, the heart, liver, and digestive organs, as elements entering into the type or temperament under consideration.

Hippocrates and his followers claimed that the difference between men lay chiefly in the color of the eyes, hair and complexion, and that these could be sorted into four groups, in which all men might be placed. In the original idea or arrangement of temperament the mental qualities and traits of character were not considered, thereby losing sight of a very necessary factor in the recognition of an individual. A number of men have given this subject some consideration, and all have, in my humble opinion, fallen into the same error—overlooking the proportionate, relative sizes of the various organs of the body as elements of temperament; failing in this, they have been unable to present any system or plan that appealed in any measure to the medical profession as a possible aid in the treatment of disease. That these temperaments are easily recognized, when of a single type, is very true; but when in combinations of two or more, they become complex and difficult to master. As to a description of the temperaments, I know of no better than that formulated by Dr. Alex. Steward of Edinburgh, in his able work, entitled "Our Temperaments," and adding thereto certain ideas of my own which, I believe, materially influence the recognition of the characteristics of each.

THE NERVOUS TEMPERAMENT,

as the name would imply, is composed of a preponderance of nerve structure and mechanical velocity of action.

Physical characteristics.—Light brown hair; grey eyes: pale, clear complexion; face tapering from a high forehead and broad supra-orbital region to a narrow chin; the nose narrow; trunk slight and thin, never

corpulent, often tall. The chest is small, the respiratory apparatus is proportionately so, as are also the digestive and other organs of the body. In other words, the nervous is in excess, proportionately, to all other elements.

Mental characteristics.—This temperament is impulsive, animated, quick at conclusions, excitable, readily provoked and as readily reconciled, imaginative, sensitive, fastidious, irresolute, persistent after final decisions, having great capacity for work, and will not give in even when in danger of physical exhaustion. Intellectual and muscular exercises are enjoyed; happiness, from whatever source, pleases the senses; and the mind is enriched by travel, literature, or art. The speech is characteristic, being rapid—often exceedingly so—frequently interrogatory and undecided. The nerve energy in this type is great, and is spent without regard to results.

THE SANGUINE TEMPERAMENT.

This is probably the most happy type of humanity, and this temperament probably enters into as many compounds as all others combined. The blending of this temperament with either of the others, or with any two of them, only adds vim and vivacity to the compound.

Physical characteristics.—Red or reddish hair; blue eyes; and a more or less pronounced florid complexion. The face is usually square; nose, broad and alæ outspread; neck, usually short, but some are more moderate in length; build, thick-set; chest, large and expansive, indicative of large respiratory organs and a large heart. The respiratory effort is full and deep, affording immense oxygenating capacity, therefore a full red glow to the exposed cutaneous surfaces. The abdominal organs are proportionately smaller when compared with those of the chest; though larger than those of the nervous temperament.

The mental characteristics.—Are impulsive, buoyant and cheerful. They draw favorable conclusions without thought; are excitable, readily provoked, readily reconciled, emotional and passionate. They are not enduring in work; but muscular exercises are preferred to intellectual ones. They are equally happy in the pursuit of small things, as they are in the greater ones. They are more happy in the pursuit than in the possession. In speech they are usually firm and outspoken, but are not often minutely informed. Every respiratory effort seems to intoxicate them, so they look only at the bright side of life, when left to themselves. They are prone to undervalue danger of all kinds; only to rue it when too late.

THE BILIOUS TEMPERAMENT.

This may be termed the intense temperament, which knows no obstacle too great, nor effort too laborious to attain an end.

Physical characteristics.—Black hair; black or very dark brown eyes; and dark or a pale olive color complexion. The face is square; nose outspread; mouth, square cut, indicative of firmness and strength of character; build, usually thick-set. The chest and abdomen are well balanced and possibly slightly larger liver, the glycogonic function being unusually active.

Mental characteristics.—This type is not impulsive, but serious conclusions are arrived at only after due deliberation; passionate, jealous, revengeful, unscrupulous when not properly trained. In business cool and wary; eager, earnest and persistent. Business or pursuit of worldly gain preferred to muscular or intellectual labor; but they are able to excel in all. They are happy in the pursuit of wealth or power, and also in their family relations, if not disturbed. They are decided; always ready; and well-informed.

THE LYMPHATIC TEMPERAMENT.

This type of humanity is characterized by its absence of hurry, and its great appreciation of animal comfort.

Physical characteristics.—The hair may be fair or light brown, flaxen, sandy-white and thin; eyes, brown or light hazel, grey, sometimes giving the impression of a green color. The corneal area is smaller, with a corresponding greater sclerotic exposure. Complexion, colorless, dense or opaque. The face, square, rather inclined to heavy jaws; nose, outspread; neck, short; build thick-set tending to corpulency. The abdominal cavity is larger, and the digestive organs proportionately so; they are usually large eaters, tending to gluttony. These people live to eat, and do not eat to live.

The respiratory effort is usually shallow, the chest flat, and its expansive power somewhat limited.

MENTAL CHARACTERISTICS.

These people are not impulsive, but slow, and the face shows a heavy expression. They come to conclusions by degrees. They are not excitable nor readily provoked; they forgive but never forget. They possess a certain amount of persistence, but lack ardor. They are somewhat enduring in work but plodding in business. They enjoy personal comfort and indulgence. The speech is slow and deliberate, and when trained they are well informed. Their greatest effort is in the direction of food and rest.

Having carefully considered the four primary temperaments, we find that in the first type, the brain is predominant; in the second, the heart and lungs are in excess; in the third we find the chest and abdomen well balanced, with marked hepatic activity, giving strength and intensity to its individuality; in the fourth, abdominal organs, with the natural result attending—a disposition to hibernation. The various compound temperaments are but modifications of the primary ones, by the union of two or more temperaments, and are indeed often difficult of recognition. But this may be materially overcome by a careful examination or inspection of the body, and noting the relative size, and development of the patient; taking this into consideration with the contour of the face, the head, the color of the eyes and hair, with the complexion, the subject would then be easily classed, as to the compound to which it belonged. It is true, physical training and environment affect temperament and tend to modify it, but not enough so to destroy its identity.

The compounds most frequently met with in this country are the nervo-sanguine, the sanguino-bilious, and sanguino-bilious with a strong nervous infusion. Occasionally we find combinations of the nervo-lymphatic, and also all the temperaments combined; giving us a people, the one, a constant care for the physician, while the other is a well-balanced individual. The first three compounds give our American people their characteristic push, speed and energy, placing them in the fore-front for physical and intellectual endurance and capacity. It is not in the province of my paper to discuss these compounds in detail, but rather to

apply the elements that we have furnished to a practical use in medicine.

To the surgeon this knowledge is necessary, that he may recognize the degree of shock sustained by reason of injury, compared with the recuperative or reactionary power of the patient, enabling him thereby to prognosticate probable results more perfectly. In his operative work he may be able to judge with some degree of certainty as to possible chance of success. In anesthesia, it will indicate the element best calculated to support the patient during the trying ordeal, and which of the anesthetics offer the best results. With the general practitioner it is often a question as to what complications may arise, and wherein lies the direction of danger. In his dealing with the very young he may anticipate a cerebral complication, by recognizing the peculiarity of the temperament. In another he may expect pulmonary or hepatic involvement and so on until every element of temperament is exhausted. To the obstetrician, this knowledge is of incalculable benefit, for by a thorough knowledge of his patient, he will be enabled by suggestion, to control the expulsive effort and direct the parturient forces, so that the patient will be capable of utilizing all her energies, both nervous and muscular, to her own ultimate safety and good. To the neurologist it suggests the best method of overcoming the various neuroses and reflexes; and by a proper direction of remedial agents, reconstructive and eliminative, to restore tone and vigor to the overwhelmed nervous organism. To the dermatologist it affords like relief, estimating as he does the possible nerve involvement or digestive disturbance likely to exist in the premises. To the oculist it is of material importance, as by a prompt recognition of temperament he may the better determine the source of ocular disturbances.

These suggestions will serve to give the student an idea that he may enlarge on, so that still greater benefits may accrue. It seems reasonable to me that a nervous temperament would be more susceptible to affections involving the brain, in the form of congestion, anemias, etc., that would be disastrous. In these people you would naturally expect various forms of neuralgias, due to the cerebal disturbances existing. In the sanguine temperament the large respiratory apparatus, to properly functionate, must have at any one time a larger blood-supply, than other organs, hence the greater danger from congestions or trauma from any cause. This is the temperament (and compounds having this temperament in the ascendancy) that gives us the greater number of pulmonary tuberculous patients and these are people who suffer the most frequently from fatal pneumonia and bronchial affections, the bilious temperament being more frequently assailed by intermittent and remittent fevers. They are not a fruitful source to the physician, for they are usually hardy and resist infection with great vigor. The lymphatic temperament, by reason of its construction, is frequently the victim of hypochondriasis, and hepatic and intestinal torpor; portal congestion seems almost a normal condition. Fermentative dyspepsia, hepatic concretions, and catarrhal jaundice are the conditions most frequently met in this people. Cardiac weakness and functional derangements are a common failure and also rheumatism and gout, due to faulty elimination. This temperament is most prone to sudden heart failure during acute attacks, by reason of innervation.

The various compounds are modified in their tendencies, and they are the ones that give us the greater trouble and perplexity. This rule may be applied to all; whichever temperament predominates in that direction will afflictions tend. I believe this to be argument enough for the close observer. Many will recall instances such as I have described. This does not in any manner conflict with the germ theory of disease, but it does explain why some enjoy immunity from infection, while others do not.

As to remedies.—The nervous type stands cerebral excitants poorly, because of a possible irritant congestive condition resulting, while cerebral sedatives and arterial depressants act kindly even in decided doses. But when suffering from shock, such elements as strychnia, glonoin and strophanthus are strongly indicated to hasten circulatory distribution and buoy the respiratory and cardiac action. The sanguine temperament is inclined to favor arterial stimulants when depression exists, and depressants in active disease conditions, with such elements as will favor the maintenance of the fluidity of the blood, also elements that control respiratory and cardiac effort. The cardiac stimulants, that, have a marked effect on the peripheral circulation, are well borne, but after inflammatory processes, due regard must be given to deobstruants and alteratives. The bilious temperament is best treated by an exhibition of antispasmodics, motor depressants and arterial sedatives. Motor excitants are decidedly contraindicated in acute conditions; the indications are for general sedatives, particularly muscular and glandular sedatives. The glycogenic function is most active in this temperament. The lymphatic subject must be favored by catharsis, to relieve common tendency to portal congestion, and autotoxemia, but especial attention is necessary to combat the tendency to cardiac failure, and cerebral stimulants are almost always indicated, particularly of the strychnia class, favoring as they do the support of the cardiac and respiratory apparatus.

The dosage of these remedies depends on the condition of the patient; if in the active or acute stage, pronounced doses of the remedies that are opposed to the condition existing; if passive, then small doses to give impetus by graduated stimulation of the organs involved. This holds good in all the compounds as well. The fact necessary to be borne in mind is, that what type of temperament is in the ascendancy, or predominates, in that line or direction will the danger lie, and the remedy and dose must be applied to these conditions. If we would add to the celebrated Von Haller law, for the proving of remedies (or substances used as medicines) a knowledge of temperament; we would be able to get more positive and perfect knowledge of their physiologic and toxicologic actions.

In conclusion, I wish to acknowledge my indebtedness to the excellent work of Alexander Steward of Edinburgh, from which I have taken some of the descriptions verbatim, because of their terseness and clearness in the primary types, for which I wish to give due credit. Some of his suggestions have but strengthened my own conclusions that a proper recognition of the peculiarities of people, both mental and physical, which we call temperament, is at least, very serviceable, if not a factor, in the proper and successful practice of medicine. Failing in this, we shall but obstruct the way to the placing of our beloved profession in a line to become a positive science.

Let us have a Department of Public Health!

IRITIS SPONGIOSA.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY ADELINE E. PORTMAN, M.D.
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Prior to 1870 almost nothing is found giving more than two forms or divisions of iritis, it being classed either as syphilitic or rheumatic, there being only three forms of exudations given in the so-called parenchymatous, namely, serous, plastic and suppurative, the clinical history, cause, treatment and termination being distinct in the type.

Serous.—Develops slowly; no pain; normal pupil or slightly dilated; little or no injection of vessels and long duration; usually shows punctate deposit on posterior surface of cornea; aqueous humor cloudy; ends without adhesions or serious effects. Treatment expectant, hygienic and constitutional, according to causes found.

Plastic.—Pain pronounced; onset rapid; pain referred to frontal and other branches of fifth pair, worse at night; circumcorneal injection, photophobia and lachrymation; pupil contracted; iris discolored and engorged, may be nodules upon its surface; exudation of lymph and iritic adhesions follow. Treatment: antiphlogistics, mydriatics and sometimes mercury.

Suppurative.—Iris very much swollen, yellowish tinge, and formation of new vessels in its substance; hypopyon forms; pain and inflammation symptoms much the same as in plastic. Prognosis usually good.

Though quite distinct types, these three forms may merge into one another, giving rise to seroplastic-plastico-suppurative, though rarely, if ever, a sero-suppurative form. Each form may pass over to the ciliary body and choroid, making other combinations and forms of disease.

After 1870, a few cases of a form of iritis were reported, that from the character of the exudate were called iritis spongiosa, but no full description being found in any text-book up to 1880, Dr. Swan M. Burnett of Washington, D. C. after having a very severe case under his care, took pains to collect the cases then reported—less than forty in all—to give, if necessary, for future guidance of others, a name to so peculiar a form. Schmidt is the first to have mentioned it, but under the head of simple iritis, of which Wecker makes mere mention in 1879.

The clinical picture is pain, which, at its height, is as acute as in the plastic form. Up to the time the exudate appears, it is not so intense, but after the exudate begins, till absorption takes place it is very severe. The sudden relief from pain when absorption begins is a marked pecularity of this form of iritis. Exudation begins with marked symptoms of irritation, in many cases very suddenly. At one visit anterior chamber is clear, at the next, is filled with a gray mass of exudate. In others it is extruded more slowly, usually begins in or below pupillary space and in most cases fills anterior chamber. Very likely absorption had begun in cases said to be only partly filled. Absorption takes place with varying rapidity, generally five to eighteen days elapsing before all traces have disappeared. The course of absorption is very peculiar, and characteristic. It begins always at the periphery, and the mass gradually diminishes from all sides equally, the pupil being last to clear.

As to the character of the exudation, it has been found on examination in its earlier condition, fibrous. Knapp, who first examined it, says: "It consists of a dense network of very delicate fibrils inclosing white and red blood corpuscles and of a finely granular substance." His opinion is that when the substance is uniformly semitransparent (hyaline, gelatinous, like a dislocated lens) it probably consists exclusively of coagulated fibrin; if gray, or whitish gray, white corpuscles, which collected in clusters appear like whitish dots; yellow or yellowish green tinge indicates red blood corpuscles. Alt says: "The exudation has two well-defined parts, the one perfectly homogeneous, like the gelatinous exudation; the other, lens-like in shape, consists of a net-work of exceedingly fine threads of fibrin, the meshes of which were filled with exudation. The two layers are the two stages of exudation so-called, at first spongy, then gelatinous." The unchanged appearance or nearly so of the iris precludes the possibility of extravasation of blood into its tissues, the iris having its normal luster, and as soon as the attack passes it is seldom discolored or changed in appearance, which would not be the case if the blood had been extruded.

Diagnosis: As soon as the exudate appears there is no difficulty in deciding that we have to do with spongy irritis. The difficulty is not to confound it with diffuse keratitis or a lens dislocated into the anterior chamber. The excessive chemosis is not present in diffuse keratitis, and oblique light shows epithelium intact. When absorption begins, the sharply defined edge of the mass appears so exactly like a luxated lens that only a magnifying glass and oblique light quickly shows the error. A fibrous mass in some of its parts, lack of regular outline, and peculiar mode of absorption, proves iritis spongiosa. The typic form leaves iris free and normal, but it may be joined to plastic form and adhesions result. No cases united to serous or suppurative forms is known. As to etiology, it may arise from any of the causes of iritis—traumatic, rheumatic or syphilitic. The great majority of cases reported were males.

Prognosis in typic form good. Treatment as in plastic: antiphlogistics, mydriatics, anodynes and hot applications. Absorption is naturally so rapid that mercury is not of benefit unless indicated by some dyscrasia. The last case seen will give a perfect picture and history of cases in general.

I. J., colored, female; seen first Jan. 9, 1898. Exudation in anterior chamber of left eye, down and outward from pupil, reaching slightly beyond pupil, which was small and adherent. First noted trouble in the eye ten days before; pain and usual symptoms of iritis. No history of syphilis. January 11, under atropin; pupil dilated somewhat, but irregularly; exudate about the same. January 12, the edge of exudate, which before had been undefined, is today sharply defined at the upper margin, the anterior chamber above it being clear and showing the pupil enlarged, but still some adhesions. January 13, only a small quantity of exudate downward and outward. January 14, no trace of exudate; pupil larger; no pain. January 16, eye clear and vision about the same as before the attack. This is as nearly as may be a typic case, though the exudate may be much longer in being absorbed. This type, when once seen, will not be forgotten, though from any text-book it has been my fortune to examine, one may not get even an idea of its real appearance.

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A NEW PERIMETER.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY CHARLES H. WILLIAMS, M.D.,
BOSTON, MASS.

In testing the field of vision it is desirable to have the same illumination of the test object in all parts of the field, and to be able to diminish the intensity of this illumination by a known and measured amount when we wish to test the field for white or colors in cases of beginning atrophy or other conditions where there is a marked difference in the extent or shape of the field of vision when tested with a full and with a diminished amount of light. This seems to be best accomplished by making the tests in a dark room and using two incandescent electric lights of one candle power each for the test object and the fixation point. A Förster's perimeter with a broad semicircular arc of hard rubber is arranged so that one lamp is placed in the center of the arc and about an inch from it, to be used as the point of fixation. Slides are made so that pieces of ground glass, London smoke glass or diaphragms with openings of various sizes and shapes can be inserted in front of this lamp. The other lamp is arranged in a similar way and can be moved back and forth from one end of the arc to the other, its motion being controlled by a small electric motor mounted on the perimeter and geared so that the test lamp is moved on the arc with the desired speed. The motion of this lamp can be reversed at any time by reversing the polarity of the armature of the motor by means of a switch held in the examiner's hand; in this way a motion back and forth can be obtained for the test object without going near the perimeter or without taking the examiner's gaze off the patient, thus making sure that the patient does not alter the direction of his eyes during the examination.

SOME SEVERE CASES OF TOBACCO AND QUININ AMBLYOPIA.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY E. C. ELLETT, M.D.

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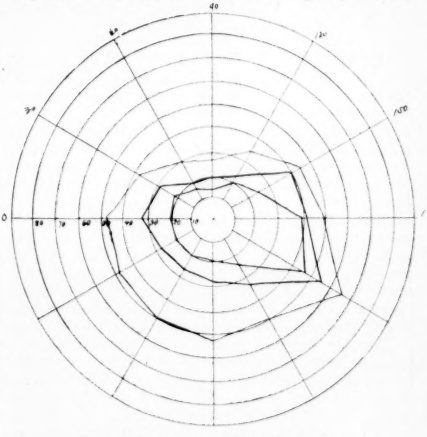
MEMPHIS, TENN.

In presenting to your notice any observations on the subject of the toxic amblyopias, the recent exhaustive works of Wood and DeSchweinitz render references to the history and literature of the subject entirely superfluous. It is from a study of the work of these gentlemen that I am enabled to appreciate the unusual features in the few cases which I wish to report, and I present them solely for the reason that they do exhibit some points a little out of the ordinary.

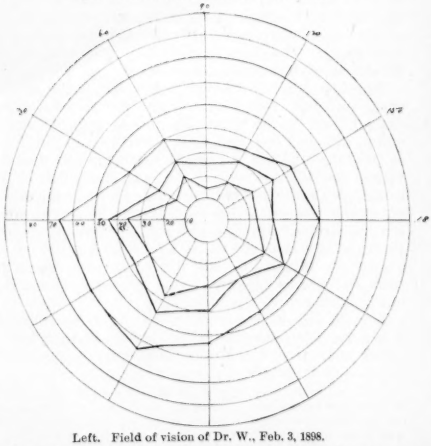
The first case was a young man of 26, whom I saw at the request of his physician, Dr. Thomas Henderson, Feb. 28, 1894. Since August, 1893, he had not been able to see to read, though his vision began to fail some months prior to that time. Since 12 or 13 years old he has been addicted to the use, or rather the abuse, of cigarettes, consuming from ten to forty a day, and at the time he came to me he was smoking from thirty to forty a day. It was his habit to awaken frequently during the night, on account of extreme nervousness, and to smoke cigarettes whenever he awoke. For six years he had been a steady drinker, beginning with beer, but for the three years preceding my examination he had been more addicted to whisky, which he said he was stopping. He was the picture of an alcoholic, extremely nervous and tremulous, his person and attire saturated with the fumes of tobacco and alcohol, and he often would suddenly and causelessly burst into tears.

The pupils were equal and normal, and vision was $\frac{6}{200}$ in each eye. Very unsatisfactory perimetry showed no contraction of the fields and no scotoma. Of this I could not be sure, as his general condition made this part of the examination very difficult, he answering rapidly and carelessly in his desire to have the ordeal terminated. The ophthalmoscope showed whiteness and cupping of the lower temporal quadrant of each nerve, with veiling of the nasal edges, and the vessels were of normal size. He would not consent to undergo treatment, and died of acute tuberculosis the following summer. An autopsy was not obtained.

The second case was that of a medical man, aged 28, whom I saw on Oct. 6, 1896. His vision has been failing since April of that year, and was reduced to $\frac{20}{200}$ in the right eye and $\frac{3}{200}$



Right. Field of vision of Dr. W., Feb. 3, 1898.



Left. Field of vision of Dr. W., Feb. 3, 1898.

in the left. He read J x with difficulty, and had been compelled to relinquish a position as quiz-master in a medical school on account of his impaired sight, and his usefulness as a practitioner was greatly curtailed. Since 12 years old he had been a smoker, at first cigarettes, but at the age of 21 he began to smoke cigars, and smoked as many as twelve or fifteen a

day. At the time of his visit to me he was smoking about half this number. For several years he has been in the habit of drinking six or eight glasses of beer a day. His physical condition, except for his vision, was very good. I found the same ophthalmoscopic picture as in the first case; whiteness of the lower temporal quadrant of each nerve head, the rest of the disc being a dirty red, and the vessels of normal size. The pupils were normal and the perimeter showed a central relative scotoma in each eye. He was advised of the nature of his trouble, told to stop both tobacco and alcohol, and was given $\frac{1}{48}$ of a grain of corrosive sublimate and five grains of iodid of potash three times a day, and later $\frac{1}{120}$ grain of strychnia in addition. He stopped smoking and has not touched tobacco since. He fought it out through a few restless days and nights and the battle was won. Stopping his beer did not inconvenience him any. His progress was steady, but slow. October 11, O.D. 20/100 p. O.S. 5/200; Nov. 2, O.D. 20/100 O.S. 8/200; November 12, O.D. 20/100 O.S. 20/200, Jan. 3, 1897, O.D. 20/70 O.S. 20/100; February 17, O.D. 20/50 O.S. 20/70, and he could read J 1 with O.D. and J IV with O.S. About March 1, 1897, he stopped treatment of his own accord, but continued to improve. May 20, 1897, O.D. 15/20 p. O.S. 15/20 p., could read J 1 fluently with each eye. He now does not smoke, but drinks a little beer. His vision in February, 1898, was 15/20 p., the ophthalmoscope about as at first and his fields as shown.

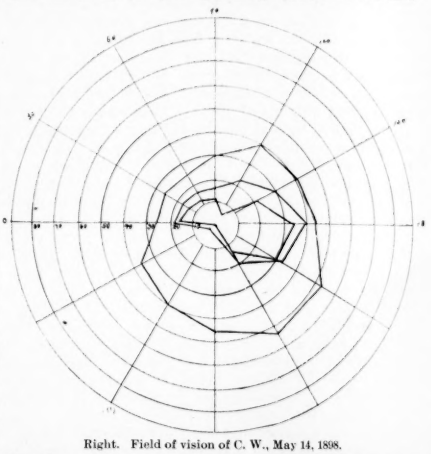
These two cases are what we must call alcohol-tobacco amblyopia, since in neither was the abuse confined to one of these substances, and we can do but little more than speculate as to the true cause of the symptoms in each case. The description of the condition which Uthoff gives as being found in the majority of his 1000 cases fits these two exactly; pathologic whiteness of the temporal half of the optic papilla (papillo-macular bundle) and occasionally haziness of the nerve head or hyperemia of its surface; so that we may put them down as typic cases, so far as the ophthalmoscopic appearances went.

The first unusual feature is the youth of both of these patients, 26 and 28. De Schweinitz says they are exceedingly uncommon before the 35th year and Wood puts it down as rare under 40. In over 300 cases quoted by these gentlemen in which the age was given, only ten were under 30 years old. Though only 26 years old, my first patient had been a cigarette fiend for thirteen years, which is about the length of time necessary to produce the condition of tobacco amblyopia. The second had also used tobacco for fifteen years, but cigars for only six.

Another point is the extreme, and in the second case, unequal, reduction of vision. In thirty-five cases Uthoff found 6/200 the lowest point to which vision was reduced, and 1/40 (or 6/240) is put down as the extreme limit. I beg to recall the fact that the vision was 6/200 in each of the first, and 2/200 in the worst eye of the second patient. Unilateral amblyopia even has been observed, but it is usual to find the impairment equal, as one would naturally expect from the fact that the cause acts systemically. It is somewhat unusual to find this condition resulting from the use of cigarettes, but my first patient did not use tobacco in any other form.

A third case is one which I am by no means sure it is correct to place in this category, and therefore I put it apart from the others, and what comments are to be made on it will apply to it alone.

C. W., a mulatto boy, age about 21, was sent to me on April 20, 1898, for poor vision. Since he was seven or eight years old he had had enlarged cervical glands on both sides, which had often suppurated. His neck showed the characteristic cicatrices on both sides and many enlarged glands could be seen and felt. Since about the same age (that is seven or eight) he had been a cigarette smoker, but never to excess. His indulgence, according to his statement, had not amounted to more than a five-cent sack of "Duke's Mixture" a week, which is certainly very moderate. A year or so ago he had contracted a venereal sore, which made its appearance within two or three days after exposure, and disappeared at the end of a similar length of time. For five weeks his vision had been rapidly failing till he had little more than light perception peripherally when he came to me. Indeed, his field could not be taken with candles, which was probably on account of a large central scotoma. The pupils were normal, and the nerves showed whiteness of the lower temporal quadrants. In the macular region of each eye the fovea showed as distinctly as we often see it in mulattoes and negroes, and in each macular region there were pin point glistening spots, such as I have often seen at the macula and elsewhere in the eyes of negroes who have perfect sight. The only pathologic condition visible to the ophthalmoscope, then, was the condition of the discs which I have mentioned. The vessels were normal. *Faute de mieux*, he was put on ascending doses of iodid of potash, which he bore with the characteristic complacency of the Southern negro. He has gradually increased it to 150 grains a day, and I show here the field of the right eye, taken May 14, when the vision in it was $\frac{15}{20}$ p. The left eye has, with the candles, a decided relative central scotoma, but the vision has improved very little. He can count fingers at one foot eccentrically with it.



Right. Field of vision of C. W., May 14, 1898.

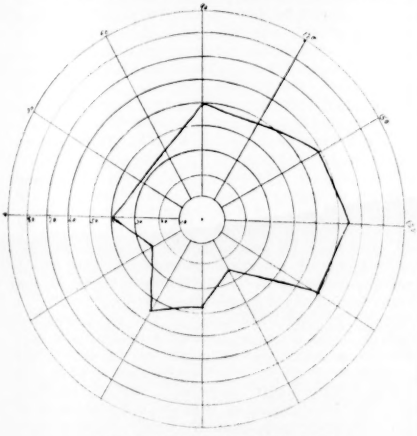
As I before remarked there is very slender evidence on which to class this as a case of tobacco amblyopia. The youth of the patient, his moderate use of tobacco, and the fact that one eye improved and the other did not, are, I think, against this diagnosis. The ophthalmoscopic appearance and the lack of positive reasons for classing it elsewhere are my reasons for presenting it in this connection.

In addition to these cases I have to present the history of a fourth.

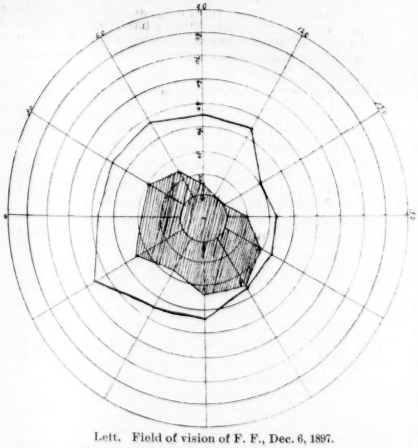
F. F., aged 30, was brought to me by my friend, Dr. Pincus, of Memphis, with the following history: Since seven years of age he had smoked cigarettes in increasing numbers and from 1890 to 1893 he smoked from forty to fifty a day. In 1893 his employment prevented him smoking so constantly and he reduced his allowance to from six to eight a day, which number, I may say, he still consumes. He smoked a cigar and a pipe occasionally and very seldom drank anything.

In the fall of 1894 he suffered from intermittent malarial fever of the tertian type for a month. On Monday, Nov. 19, at the suggestion of a medical student that he take quinin, he procured some of the sulphate and some empty five-grain capsules, and mixing a pinch of capsicum with the quinin, he filled twenty-four of the capsules, and beginning at 7 A. M., he took two capsules every hour till 7 P. M., this making the amount about 120 grains. At 7 P. M. he was completely deaf, but the deafness passed off by 10 o'clock, and he felt no further inconvenience in any way till Thursday, the 22, when his eyes burned and smarted a little, but there was no impairment of

sight. I may say here that his tertain organisms were effectually routed. Friday morning he awoke with the sight of both eyes very much impaired, about as much, he thinks, as it is now. He was taken to a physician about noon of that day and when he left this gentleman's office at 1 o'clock he had lost the perception of light, nor did he regain it until the end of three months. He was given iodid as high as eighty-five grains, three times daily, and also went to the Hot Springs of Arkansas. At the end of three months, as I have said, he regained the perception of light, and from that time to the present has experienced a very slow improvement in vision. When I examined him first in May, 1897, his vision was O. D. $\frac{5}{200}$ O. S. $\frac{1}{200}$ eccentrically. His fields I here show you, and would call attention to the changes in that of the right eye with the final appearance of a relative ring scotoma. Colors appear to him as different shades of light and dark. Tested as for color



Right. Field of vision of F. F., Dec. 6, 1897.



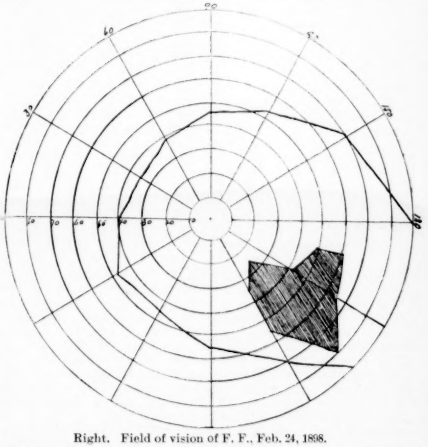
Left. Field of vision of F. F., Dec. 6, 1897.

blindness with colored wools, he matches the test skeins very well, not by color, he says, but by their relative darkness. I once tried nitrite of amyl inhalations, according to the suggestion of Dr. Kollock, of Charleston, but though vision was temporarily doubled, no permanent improvement resulted. The pupils of this patient are dilated, but respond to strong light and to accommodation. The ophthalmoscopic picture is that of optic atrophy (white) with papery nerve head and attenuated vessels.

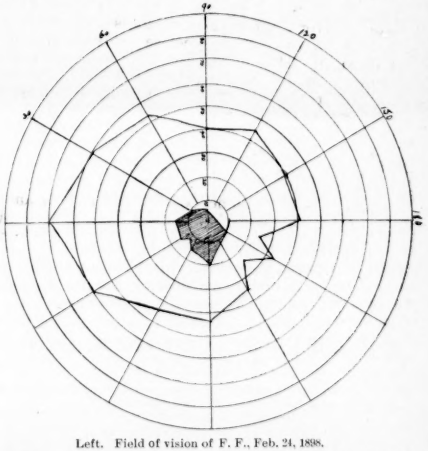
In this patient we see nerves already probably affected to a slight degree by the long-continued abuse of tobacco, and further devitalized by a continued tertain malarial infection, become the victims of a large, but not enormous, dose of quinin. Since this poison is more or less accidental, age and sex do not bear on the condition. The unusual features of this case are the following:

1. The length of time which elapsed between the ingestion of the poison and the appearance of the eye symptoms. As far as I can determine the usual condition of affairs is a rapid effect on the vision.

2. The severity and chronicity of the visual impairment.

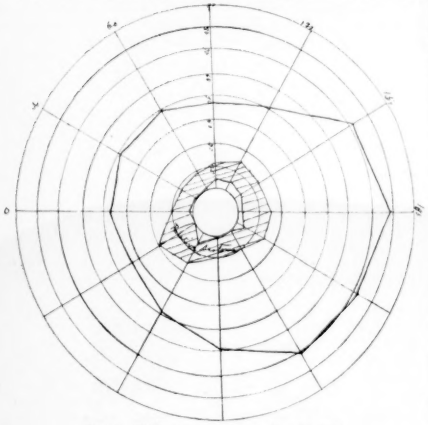


Right. Field of vision of F. F., Feb. 24, 1898.

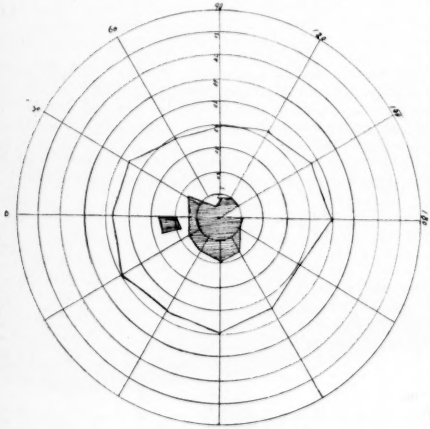


Left. Field of vision of F. F., Feb. 24, 1898.

3. The unequal effect on the two eyes.
4. The peculiar and dissimilar visual fields, presenting a relative ring scotoma in one eye and an absolute central scotoma in the other. The effect on the color sense is not remarkable, considering the impairment of vision and the ophthalmoscopic appearances.



Right. Field of vision of F. F., May 30, 1898.



Left. Field of vision of F. F., May 30, 1898.

SOME RESULTS IN CASES OF TOBACCO AMBLYOPIA.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY LOUIS J. LAUTENBACH, M.D
PHILADELPHIA, PA.

The results here presented to you are the conclusions drawn from the various cases of tobacco amblyopia treated by me during the past seventeen years. The cases selected are intended not only to call attention to the favorable results following treatment, but to serve especially as illustrations of the faith that is in me. The subject has been so exhaustively handled that it is needless to theorize more ; practical experience is after all our final teacher.

I employ the term tobacco amblyopia to express a bilateral, retrobulbar neuritis of the optic nerve with central color scotoma, followed later by an atrophy of the nerve occurring in one addicted to the use of tobacco, and so far as known not using any other toxic agent to excess. The condition may be due to a primary hyperemia of the nerve in this location—the interstitial inflammation, with later the formation of connective tissue elements followed by atrophy of the axial fibers of the optic nerves following it. The primary lesion may be a direct action of the poison on a central inhibiting center followed by the phenomena above outlined—a suggestive fact in connection with this supposition being that it is always bilateral. Whichever of the various theories as to its primary origin may ultimately be proven to be the true one, the lesions met with are well understood. That which especially concerns us are its early recognition and curability, and the measures that conduce thereto. I believe that tobacco blindness is not an uncommon affection, being far more prevalent than usually supposed. It varies from a condition of but slight obscuration of vision to a complete loss of sight. It is in the early stages especially that the affection should be recognized, as then the complete restoration of sight is comparatively easily accomplished, whereas in the later stages when atrophy has set in, the disease can usually be arrested but the vision can not be fully restored. The reason why we find in hospital reports so very few records of tobacco amblyopia is, I think, that these slight cases go unrecognized, the condition being perhaps unconsciously overcome by the doctor insisting upon more rigid habits and alterative treatment. The cases are usually recognized by the disturbance of vision observed on passing from the dark to the light, or even vice versa; by an obscuration of vision more or less constant; by perhaps even a slight sluggishness of accommodation; by at first a hyperemic condition of the outer half of the nerve, especially below, and, I fancy, a slightly sluggish pupil on varying the illumination; and by olfactory evidences of the excessive use of tobacco as well as from the history.

As for the form in which tobacco must be used to bring about such results, I would say that it would have to be smoked, that is, the oily alkaloid volatilized, and the other constituents of the tobacco gasefied. In my work I have never seen a case produced by the use of snuff, nor have I seen a case in which I was sure it was caused by the handling of the tobacco either in its fresh or dried state, nor have I seen a case in which there was any evidence that the chewing of tobacco has caused it. I know this latter statement is at variance with that of most observers, and yet so sure am I of this fact that I allow my smokers, who are also chewers, to continue the latter if they will but stop the former. Case 2 is one to whom I allowed this privilege and yet he improved from R. E. 6/19, L. E. 6/19 in three months' treatment while using chewing tobacco constantly to R. E. 6/6, L. E. 6/6.

As for the age at which this disease appears, I think it well to recognize that *it is especially liable to occur in adolescence and early manhood*, on account

of the greater susceptibility of the nerve structures. I have found it present in a comparatively large number of patients under 21 years of age. The youngest was aged 13 years. Case 1 was a well-marked and typic case of rapidly progressing tobacco blindness. The oldest case I have treated was 76 years of age.

In regard to the condition of the pupil, I have frequently observed slight irregularities and inequalities present, and as before said, I fancy that the response to light stimulation is slightly less prompt than normal. I will briefly outline a few cases and their results, making comments as necessary and will indicate later the treatment followed. All the cases showed typic central scotoma with the usual objective symptoms.

Case 1.—Frank A. R., a school boy aged 13 years, was examined Jan. 19, 1888, and presented the typic symptoms and history—a cigarette smoker, had never used alcohol; had history of increasing loss of sight during the past year. Remote vision, R. E. 7.⅝₈; L. E. 7.⅝₈; proximate, R. E. 1 J @ 7—40 cm.; L. E. 1 J @ 7—40 cm. The remote vision was slightly improved by glasses. Stopping the tobacco entirely and pushing the treatment the vision was raised in four months to R. E. 7.⅝; L. E. 7.⅝, improvable with H.As. glasses to B. E. ⅝.

Case 2.—Mr. Thomas R. H., aged 50 years, came Dec. 28, 1896, with a history of steadily decreasing vision, commencing one and one-half years previously. He never had used alcohol in his life. On his arrival I observed he had a very peculiar gait. He walked with his head twisted to the side and downward, at once indicating central total scotoma, which was confirmed by taking the fields. His remote vision was R. E. ⅒, L. E. ⅒; not improved by glasses. Near vision was R. E. 20 J. @ 19—100 cm.; L. E. 20 J. @ 15—100 cm. He had early noticed mists and obscurations of vision and an increasing impairment of sight. Later on he began to observe that his central vision was gone; he has been compelled to rely on eccentric vision for about a year. His tobacco smoking was stopped at once and he was allowed to chew although he had not done this before. He had averaged over eight cigars a day, but ceased at once. The treatment was pushed to the fullest extent and he was very faithful in following all my directions. After three months' treatment I ordered for him B. E. + 2.75 for near = 1 J. @ 17—45 cm. His distant vision without glasses was R. E. ⅝, L. E. ⅝. This was a typic case of tobacco blindness and one easily proven, and yet by ceasing smoking and thorough treatment his remote vision was made practically perfect, his central vision being restored to him, and instead of walking with the head twisted on the body he saw perfectly well with the head erect and directed forward as natural.

Case 3.—George W. S., a tobacco dealer, aged 57, came to me Feb. 5, 1898; a case dating back some ten years since its origin, one in which atrophy had occurred to a great extent. Remote vision, R. E. ²⁄₆₀, L. E. ³⁄₆₀, not perceptibly improvable by glasses. Proximate vision, R. E. some 50 J., L. E. 50 J., not improvable by glasses. No alcohol has ever been used by the patient, but he has been a constant smoker since he was a boy. After three months' treatment and the ceasing of the use of tobacco, continuing the chewing, however, his remote vision improved to R. E. ⅝₁₈, L. E. ⅝₁₈; with glasses, R. E. ⅝, L. E. ⅝₁₂, and his near vision with glasses to B. E. = 1 J. @ 21—38 cm.

Case 4.—Mr. John R., aged 76 years, came to me March 27, 1897, with a typic history of tobacco blindness, dating back some twelve years—the observed symptoms confirmed the history. He had always been a heavy smoker but a moderate drinker. The condition present was one of extending atrophy. His distant vision was R. E. ⁴⁄₆₀, L. E. ³⁄₆₀, not improved by glasses. Near vision, R. E. some 30 J, L. E. some 40 J. I could not entirely stop his smoking, but put him on the scantiest allowance possible, and instituted the usual treatment, with the result that with glasses his distant vision improved to B. E. ⅝₂₄, and near vision to B. E. = 3 J. @ 20—35 cm. The case is interesting on account of the age of the patient, the length of the period of involvement and the fact that despite these factors there was a marked improvement in vision.

Case 5.—Mr. G. W. S., New York City, jewelry salesman, aged 33 years, came March 8, 1894, with the typic history, fields, symptoms and appearances of a commencing tobacco amblyopia. He commenced the use of tobacco as a boy and continued at it pretty continually, using at the time eight or ten cigars a day. Later on he commenced to use alcohol, but not excessively. His symptoms of blurred vision and obscurations, especially when there was a change of illumination, particularly when leaving the outer air and entering a room, had continued for about a year, lately seeming to get worse. Occasionally he momentarily saw double, but attributed this to his stomach. Remote vision, R. E., ⅝₈? + 1 × 90° = ⅝₈; L. E., = ⅝₈? + 0.50 × 90° = ⅝₈. Proximate vision, R. E., 1 J @ 13—57 cm; L. E., 1 J @ 15—64 cm. The proper glasses and treatment were ordered for him and he was strongly urged to stop smoking, being warned he would go blind unless he ceased it.

I saw very little of him after this, but have learned from his friends that he continued the tobacco habit until quite blind, when he consulted an Eastern specialist, who insisted on the stopping of the tobacco, but he refused to obey. His vision is now so bad that he has not been able to do his work for over two years, and lately is compelled to have some one guide him when he goes outdoors. This case excited so much compassion in New York City that a benefit was given him the past winter, at one of the prominent theaters there, the announcement indicating the total blindness of the beneficiary. We will observe that when he presented himself his vision for near and distance was almost normal, and yet four years afterward he was totally blind.

Case 6.—Mr. John A. Z., attorney, age 23 years, came for the first time March 23, 1893, with a typic history of tobacco amblyopia, and the examination gave absolute evidence of the same fact. The blurred vision on going into the light was very marked. It had been coming on for about a year. Remote vision was, R. E., ⅝₃₀, with glasses ⅝; L. E., ⅝₃₀, with glasses ⅝₁₂. Proximate vision, R. E., 1 J @ 12—48 cm.; L. E., = 1 J @ 12—46 cm. After cessation of the smoking habit (he was a very mild user of alcoholics) and steady treatment for four months, he was discharged with a remote vision of R. E., ⅝; L. E., ⅝, with glasses, and proximate vision R. E., 1 J @ 12—50 cm.; L. E., 1 J @ 12—50 cm. His eyes were practically perfect.

He again appeared April 23, 1896, having recommenced smoking shortly after his discharge by me, although I had carefully informed him as to its danger. His remote vision now was R. E., ⅝₂₄?; L. E., ⅝₂₄; improved with glasses to R. E., ⅝ +; L. E., ⅝; and proximate vision, R. E. = 1 J @ 12—44 cm.; L. E. = 1 J @ 12—44 cm. After three months' treatment such as had been followed before by such good results he was again discharged as well, with normal vision, and up to this time he has not reappeared.

It will be noticed that the first three cases above noted developed in those who had not used alcohol in any form. Of the others none had used alcohol to excess. Several of them continued to chew after the treatment was commenced and yet the vision improved. In all in whom a favorable result followed was smoking withdrawn.

The treatment to which I now subject my patients comprises the routine measures of absolute stoppage of smoking, the use in increasing doses of iodid of potassium, the use of increasing doses of strychnin. In addition, I always order the frequent applications of hot washes to the eyes, preferably by means of eye cups. I always use irritants, such as alum stick, etc., to the lids myself two or more times a week. I always advise hot plunge baths if possible every night, and order that hot water, hot milk or hot lemonade be used frequently and liberally. I have observed quite a marked increase in the amount of improvement developed in my cases since these latter measures were systematically added to the treatment. I believe they serve to improve the local circulation about the eye as well as the general circulation, thus stimulating the metabolic processes and strengthening the activity of the secretory organs to such an extent as to the sooner relieve the system of the toxic agent as well as of the results of the perverted nutrition. It may be termed a going back to the old water treatment.

1723 Walnut Street.

AMBLYOPIA FROM AUTO-INTOXICATION.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. B. YOUNG, A.M., M.D.

BURLINGTON, IOWA.

Within the past year I have had under observation six cases of amblyopia differing in degree, and more or less transitory in character, for which I have been at a loss to give a definitive diagnosis. The possibility of an hysteric origin has not been overlooked. Indeed with two of the six this idea is still entertained. But with the others, the presence of a particular symptom, coupled with intestinal derangement, and this more or less uniform in all, seems to allow the characterization which appears in the title of this paper. I will endeavor to describe briefly these four cases:

Case 1.—Mrs. C. S., age 40, mother of four children, hitherto vivacious and apparently healthy, aborted last May in the sixth week of her pregnancy. She was making good progress toward recovery under the care of her family physician, when on the evening of the third day, without any undue flooding, pain, or other bodily disturbance, she complained of a failure to see objects distinctly—as if the lights had been turned down. The next morning she could see nothing—had not even light perception. I saw the case immediately and found the conditions as follows: Patient in bed and a professional nurse in attendance; alarm and despondency manifest; the face was pale, almost putty color; the eyes had the aimless stare and wandering, peculiar to those blind from atrophy; the pupils were widely dilated and unresponsive; no complaint of pain about the eyes or head; and no hypogastric tenderness. The tongue had a dirty yellow coat, and the breath a peculiar foulness of odor. I wish that I could accurately describe this odor; for this is the particular symptom which these indeterminate four cases all had. You have all noticed the odor of the breath in cases of extensive corneal suppuration. These amblyopic cases had an odor equally putrid, but more stale and musty.

Ophthalmoscopic examination was negative—the discs were perhaps a little pale, nothing more. Both nurse and physician were interrogated, but the reply was in each case positive "no mydriatic medicine had been used in any way." The bowels were said to be inactive, and the appetite nil. The pulse, temperature and urine were negative. The odor of the breath, associated with loss of appetite and inaction of the bowels, suggested a failure of digestion; and in the absence of any structural changes in the eyes, I hazarded the opinion that if the alimentary canal was promptly cleaned out by a cholalogue cathartic, vision would probably return. Calomel was given at once, and continued until the bowels moved freely (the nurse describing the odor of the discharges as foul beyond anything in her experience), with the result that on the third day the pupils reacted; within a week there was Q. P. L.; and a month later, after correction of astigmatism, vision was $^{20}/_{20}$ in both eyes.

Despite a careful dietary, however, and more or less in the way of medicine all this while, a normal appetite, regular action of the bowels, and buoyancy of spirits were not regained until two months later.

In January last there was a return of all her troubles in a modified form, constipation, poor appetite, foul breath, low spirits, and vision reduced to $^{20}/_{70}$ and reading headlines in the papers. Ophthalmoscopic examination was again negative. The field for form was perfect; for color, uncertain. The red and green squares on the perimeter targets were not recognized at all, but when shown in larger areas were correctly selected in a number of different shades. The same line of treatment was employed as in the first attack, (pleasure journey included) and the result while more slowly attained, is the same.

Case 2.—P. R. S., age 59, formerly a master mechanic for a railway company, consulted me for the first time in January, 1893. He thought his vision might be helped by glasses. The record shows that I got for him $^{20}/_{30}$ in the left eye with -1.5 sph. and -0.5 cyl., axis 90; but only $^{20}/_{70}$ in the right with -2 sph. on account of opacities in the posterior lens cortex. In December, 1895, he came for a change of glasses. He now had $^{20}/_{50}+$ in the left eye with -2.5 sph. and -0.75 cyl., axis 90. In the right eye the lens seemed a little more opaque. (It is to be noted here that from this time on Wallace's test card was used, the letters having only 4′′ angle).

In January, 1897, he came again, very much discouraged over the continued failure in vision. The left eye had now only $^{20}/_{50}-$ with -4. sph., and cyl. as before. The disc was moderately excavated and the tension was apparently too high; but no fault could be found with the pupil, ant. chamber, or field of vision. However as there was some complaint of pain at times, and the condition was that wherein one hesitates to decide between simple atrophy and chronic glaucoma, I felt that a tentative exhibition of a miotic was not out of place. I therefore prescribed pilocarpin; and after some days my patient reported the situation improved both as to comfort and vision.

In November, 1897, he again presented himself, very despondent. "Vision" he said, "had again failed, had been so bad at times that he could hardly get about." He had abandoned business and was trying to take care of himself; had had some difficulty with his digestion, but had not consulted his family physician. Sometimes he thought he saw better with the eye that had the cataract. His face was pale and his manner was languid, but to my great surprise vision was more acute in the left eye than at his last visit. With -7. sph. (an increase 3 D $-$) and -0.75 cyl., axis 90 he had almost $^{20}/_{40}$. Tension was normal and the field was normal. I made no change in his glasses, but insisted that he should see his family physician at once. He came a month later, having in the meantime gone to see a physician in Chicago. There he had gotten a diagnosis of enlarged prostate and chronic cystitis. Urinalysis had shown the presence of pus and a little albumin, but no casts. He had been advised to learn and practice self catheterization, and for this purpose had ordered a catheter. He thought his vision was again worse, but I could see no change. In January of this year his daughter wrote me that "vision had again failed; was just as good without glasses as with; and poor both ways. The Chicago doctor had written that it was probably due to albuminuric retinitis; and the prospect was grave." I thereupon went to see my patient at his home. I found him confined to his bed, very feeble and despondent, about ready to give up the fight. His appetite had failed; the bowels were inactive, and he had the characteristic odor of the breath. Vision was reduced to Q. P. L., and not improved by his glasses. I dilated the pupil with homatropin and examined the fundus thoroughly; but no suggestion could I find of hemorrhage, or retinal inflammation. The disc was possibly more excavated, but even that was doubtful. Tension was normal. In consultation with his physician, I afterward learned that in attempting self catheterization, a silver catheter had been used; violence had been done; and an orchitis set up. And this was the original cause of his going to bed. As in case 1, I advised the free use of calomel, and expressed my belief that the amblyopia was toxic, although probably not uremic in character. How thoroughly my idea of treatment was carried out I do not know, for we were forty miles apart. But I understand that it obtained in part at least, with good results. A month later my patient died. The daughter, in writing to me of this event, said the nurse described it briefly as "death from uremia." But she also wrote these particulars: "Six days prior to his death he had some friends in to play cards with him. He had been up and around but was weak. Three days before he died he began to suffer pain (I subsequently heard that this was in the lower part of the abdomen), and this was more or less continuous to the end. The day before he died he was up and dressed; but in the evening had a terrible chill; an hour later became delirious; and went from that condition into coma which terminated fatally in a few hours." No autopsy.

Case 3.—J. W., age 35, a machinist in the railway shops, came to me Oct. 6, 1897, to have a small foreign body removed from the cornea. It was superficially lodged and easily extracted. Otober 18 he returned to say that his injury of the 6th instant had been more serious than he thought, as he was unable to see the lines on his work. The injured eye was perfectly healed, and had V$=^{20}/_{40}-$; while the uninjured eye had only $^{20}/_{30}-$. The discs were a little pale; no other abnormality. Hyperopia (under scopolamin) was 0.5D. Glasses did not help. His general health, he said, was good, except for a little indigestion and a little constipation. He used tobacco freely, and drank weak domestic wine at home. He also had a little difficulty in telling colors—confused reds and greens. This proved not be a typic scotoma for color; but I nevertheless looked upon the case as a tobacco alcohol amblyopia, and contented myself with advising total abstinence. After a month of this, he returned to say that he was no better in vision, and now he had no appetite. He was pale and anxious-looking.

All at once, in coming close to him, I caught the odor of his breath. It was identical with that in Case 1. So I gave calomel to free catharsis, and followed this with calomel and salol

in small doses, thrice daily, for a number of days. Under this treatment the breath became sweet, appetite returned, and the bowels became regular. On December 12, my record shows that he accepted a correction of +0.5 sph. which he had before refused, and had $^{20}/_{30}$ + in both eyes.

Case 4.—T. G., age 12 years, schoolboy, son of a farmer, came home from school one day, about the middle of last December, complaining of headache and inability to see his lessons. He had been dull and listless for a week or two, but prior to this had made no complaint. I did not see him until he had been ill five weeks. He had now been confined to bed since January 9, suffering from obstinate constipation, persistent vomiting, and pain in the head and eyes. His bodily weight had fallen from 90 to 65 pounds, and he had an unnatural appetite—at one time craving, at another indifferent. His vision had also failed.

The boy was spirituelle in appearance; greeted me pleasantly, and answered questions willingly, in a subdued drawl. General weakness was manifest; but there was no evidence of any paralysis, and the reflexes were normal. The tongue had a yellow and brown coat, and the breath was not sweet. Vision was $^{10}/_{30}$ — in the right eye, and $^{10}/_{30}$ in the left—better with + 0.75 cyls. (90 degrees) than without. He professed inability to read any ordinary type, but read a few words in large type, held very close.

The fundus, which I could see best (erect) with + 4.D correction (and I have hyperopia 2.5 D) had no markings that might not have been normal. The inferior temporal vessels gave a suggestion of fullness and curving, and the pigment in one or two places was not evenly distributed. But I could find no swelling at these points or about the papillæ. As in the other cases, I advised a thorough exhibition of calomel, and careful supervision of the diet. This advice developed the fact that in order to keep the bowels from complete inaction the cascara-strychnin-belladonna pill had been resorted to, and he was taking from three to five every night at bedtime. The calomel, however, was given, as I afterward learned, and produced the most foul-odored discharges that the family had ever known. Following this there was a little amelioration of the conditions. But the treatment was not pusbed, and the benefit was temporary.

I did not see this patient again until three months had elapsed. Stimulated to more persistent effort by their family physician, wonders had been worked in the boy's general condition. He is not yet able to walk, but he sits up all day, and is gaining in strength and weight. His vision is also improving slowly. He can tell the time by the wall clock and read a little Jaeger No. 6. There is still nothing in the fundus, that I can see, to account for this defective vision.

Extended comment seems to me unnecessary. No one realizes more fully than I the incompleteness of the pictures herewith presented; and that there is nothing in these visual peculiarities which might not have been simulated nolens volens. Had I seen but one, or, at most, two cases of this character I should not have so trespassed on your time and attention. But the number of cases and the constant association of the visual disturbances with manifest disorders of digestion which were so nearly alike in all, has impressed me.

I also deem it but justice to myself to say, that I had exclusive control in but one of the six cases; and this is said with no intent to disparage my colleagues in the other five. It only explains, in part, the absence of systematic investigation for the moving cause. Of the two cases not described, it remains to be said that one was a boy aged 10 years, the other, a man aged 27 years. Both recovered.

To recapitulate according to age: There was one at 10, one at 12, one at 27, one at 40, and one at 63. Five males and one female.

DISCUSSION ON TOBACCO AMBLYOPIA.

Dr. F. C. Hotz, Chicago—I was invited to open this discussion, but I take it that I need not cover the whole subject that has been presented, and that it is my duty simply to start the ball of discussion rolling. My experience with toxic amblyopia has not been very large. I have, for instance, never seen a case of quinin amblyopia, or one from any other cause than tobacco and alcohol. My cases were mostly of the mixed form, both alcohol and tobacco being used to excess by the patients. From the observations that I made, I think the gradual loss of sight, the slight ophthalmoscopic change at the disc and the sluggishness of the pupils were the prominent clinical symptoms. The patients do not, as a rule, come to us at an early stage, but I have among my cases one that is an exception, and I have not heard or seen anything like it. In that case, the patient had good vision in the morning and two hours later his vision was completely obscured in both eyes. He was a saloon-keeper and was one of his best customers, both as to wet stock and the weeds. He was secretary of a lodge, and one morning (this occurred in 1875) he wrote up the minutes of a previous meeting to report at the meeting to be held that afternoon. He went to the meeting two hours later, and when the chairman called upon him to read the minutes, to his amazement he was unable to see his own handwriting.

He came to Chicago two or three days afterward, and an examination showed slight blurring of the edges of the disc, the vision reduced to less than $^{20}/_{100}$, and the perimeter showed a positive central scotoma in each eye, in the right covering ten degrees, and in the left five degrees. He was advised, of course, to stop drinking and smoking at once, and to use the iodid of potassium in increasing doses, pushing it rapidly. In a few months there was no trace of scotoma, and central vision had improved to $^{20}/_{20}$. In this case I am not quite certain whether the gentleman has absolutely followed out my orders as to the liquor, but I suspected all the time that he did not.

We are often told by patients of the sudden loss of sight, and find on closer questioning that vision had been failing gradually, and they reckon the loss only from the moment when they failed to read, but in this case there is evidence of the patient having been able to read and write two hours before the total failure.

Dr. Casey A. Wood, Chicago—I have been especially interested in Dr. Young's paper, because I believe that I have obtained ample evidence of the auto-intoxication theory of amblyopia. Horner—and I do not think there has ever been any more acute observer of these cases—as long ago as 1873 expressed the opinion that inasmuch as he had noticed chronic gastritis in alcohol amblyopia, so did he believe that the changes in the stomach had to do with toxic amblyopia quite as much as the tobacco or alcohol in the system. Sachs, a short time ago, went even further and stated, I believe, that it is not the nicotine or alcohol but some compounds of these things in the stomach which produced the retrobulbar neuritis of toxic amblyopia.

There are other points of interest we should not forget. Amblyopia often comes on in diabetes, as a result of malnutrition. Another point to bear in mind: Tobacco does not set up changes in other nerves. Another matter to consider in connection with this paper is that form of atrophy of the optic nerve that Uthoff placed among the unknown causes. I have for several years held the belief that these cases wre in some instances at least due to auto-intoxication. In talking the matter over recently with Dr. Klebs and Dr. Turck of Chicago, we all thought it was not impossible that this might be the case. In a series of experiments on dogs, recently, it was noticed that in some instances, after hypodermic injection of certain ptomaines, amblyopia followed. We have continued these experiments, and I propose to follow them up, and I suggest to you all the proposition that a certain class of cases of progressive optic nerve atrophy are the result of absorption from the intestinal tract.

Dr. D. S. Reynolds, Louisville—This is a field that is very fertile, I think, and it is fortunate that a large number of observers are cultivating it. I have every reason to believe that there are many cases of amblyopia due to auto-intoxication. That view has been forced upon me by experience. I am

equally convinced that the cases of tobacco amblyopia are difficult to separate by any pathologic changes, by perimetry and the color test, from similar conditions found in persons given to the use of other toxic drugs. I do not believe that the use of alcohol alone, as a beverage, is so likely to produce amblyopia as the condition that it brings on by way of disturbed functions. The inhibitory effect of alcohol upon the eliminating organs affords, at least, reasonable grounds to suspect that a part of the results of amblyopia formerly attributed to alcohol are really due to auto-intoxication, because similar conditions are found in people with disturbed nutrition who do not use alcohol. There are many cases in which amblyopia at first may be very slight, and when you see the same again, say after a lapse of two or three years, you note that the area of affected optic nerve substance has gradually extended, and if symmetrically in all directions from the central point, there has been very little increase in the amblyopia, but if more extended toward the temporal side of the disc, then the amblyopia has been correspondingly increased.

I think I know that tobacco does produce a form of hyperplasia resulting in changes in the nerve structure, and I dissent from the view that it operates upon the optic nerve alone, because it is well-known that those who use tobacco in any form have disturbances of muscular co-ordination, and are liable, most of them at least, to insomnia. The fact, too, that tobacco heart is a recognized form of weak heart, is another evidence that other parts of the body than the optic nerve are disturbed.

Now, I believe that the tea-drinker is in just as much danger as the habitual consumer of tobacco, and that these are not in much greater danger than the excessive coffee drinker. I believe that coffee does not hurt any one who takes active exercise, and who takes the coffee in the morning only, but those who use it three times a day and often extra cups between meals, are apt to have trouble. I know a lady in Louisville who got in the habit of drinking coffee to such an extent that any intelligence of a disturbing character called for the use of more coffee, and she had such disturbances of muscular co-ordination that she became unable to stand alone. Her vision is so bad that she can no longer read, and can only see sufficiently to distinguish chairs and large objects about the room.

Dr. LEARTUS CONNOR, Detroit—At our meeting in Newport, I presented a paper on "Tobacco Amblyopia, Pure and Simple," and reported all the cases I could ascribe to a definite cause. Since then a few have come to my notice, and one of them was singular in this respect, that the man, 40 years old, began to smoke as soon as he could walk. His father was an inveterate tobacco user, and the boy was taught to light the pipe and smoke it before the father received it. No doubt it was a very pretty thing to the father, and the boy kept up the use of tobacco nearly constantly until about a month before I saw him, when he noticed a failure of vision. He was a very nervous man, but otherwise in perfect health, and he never used any alcohol, tea or coffee. Characteristic evidences of disturbance of the optic nerve were apparent; the vision in one eye $^{4}/_{200}$, and in the other $^{2}/_{200}$. When I told him what he had to do, he said: "I would rather die than do that, but for the sake of my wife I will try it." He did try, and in three months his vision was $^{20}/_{30}$ in either eye and he could read J1. Some six months after this he met with financial difficulties, and in a fit of despondency killed himself. Whether the loss of tone to the nervous system rendered him unable to resist this action in the time of trouble I do not know.

I have never seen a case of quinin amblyopia, but a case came to me recently, a little child about 12 years old, who had the history of using three or four cups of strong coffee three times a day. For a month or two before her visit to me she had quite severe headaches, and her right eye finally became utterly useless for sight. Everything looked red before her and the right eye saw things imperfectly. If I held my hand before her, she saw it, but declared its position reversed from what it actually was. The ophthalmoscopic evidences were negative. The stopping of the coffee alone resulted in the diminution of these symptoms and the return of normal vision.

As I remarked to Dr. Reynolds, a few minutes ago, coffee has given me more trouble in the disturbances of vision than all the other drugs used by humanity put together.

Dr. W. H. WILDER, Chicago—I think there is a suggestion of considerable truth in the idea of auto-infection causing impairment of vision, but I can not believe that many of the so-called toxic amblyopias are cases of auto-intoxication. The cases reported present certain unique features, and it would seem to be difficult in many cases to dissociate the symptoms from hysterical manifestations. As far as intoxication with quinin, or any other drug than tobacco, is concerned, I have never seen but one well-marked case. I remember seeing one case of quinin amblyopia in a woman residing in the South who had taken very large doses of this drug for malaria. The general impression is, I think, that the ill effects resulting from the use of tobacco are due to nicotine, but I do not think this can be proven at all, but rather that the trouble is due to some other product of tobacco, possibly to the ingestion of pyridin. It has been shown that when tobacco is smoked in cigars, collodin is present in large percentage, whereas when it is used in a pipe pyridin is the main product which gains entrance into the system, and naturally we would expect more of it to be ingested the shorter the pipe. I believe it is a well-known fact that more of these cases of tobacco amblyopia are seen in England than elsewhere in the world, and it is probably due to the fact that the Englishman usually smokes a short pipe. That lends some support to the idea that it is pyridin that produces the ill effect.

Aside from all this, there is also the factor of susceptibility of the individual. We can not say in any given case that a man is likely to have an attack of tobacco amblyopia, and certain races, the Cubans and Spanish, for instance, are almost free from it. The use of certain qualities of tobacco also seems to produce more trouble than others. Aside from the susceptibility of the patient, I do not believe an individual is liable to an attack unless the resisting power of the whole organism is lowered, and then an excess of either tobacco or alcohol is liable to bring on disturbances of digestion and a lowering of the general vitality, together with an inflammation of the nerve.

Dr. D. C. BRYANT, Omaha—I have had a case under observation for ten years that is very susceptible to quinin. It happens to be my brother-in-law and I have had a good opportunity to observe him. Dr. Wilder spoke of the difference in the influence of the drug according to whether the patient was or was not in good health, but this patient seems to be an exception to that rule. He first noticed his trouble ten years ago, when he was suffering with malaria or mountain fever in Western Kansas and had taken large doses of quinin. His vision became very poor, and as he expressed it, "he was seeing through a pin hole," the vision being reduced to a central point. In the course of a month he had a relapse of the disease and quinin was used again with the same effect. He left the ranch, came home and recovered entirely. In order to see what effect it would have upon his eyes, some time after recovery I gave him a dose of quinin. He was then in good health, but a dose of 15 grains would markedly reduce his vision.

Dr. REYNOLDS—Did it produce peripheral contraction or obliteration of the central vision?

Dr. BRYANT—Peripheral contraction. It seems to be a clear case of quinin poisoning.

Dr. C. R. HOLMES, Cincinnati—I have under my observation a case that was rather unusual. On a Sunday a message came

to me to call at a certain house. Not going to my office on Sunday, my assistant received the message and made the visit. He has been with me nine years, is a very capable man and has made some excellent drawings. I mention that to show that he knows optic nerve changes when he sees them. He found the man drunk and blind. He had been to Washington, where he had been successful in securing a patent. He had been reading on the train on the way home and he stated that having caught cold he sent for some whisky and quinin. He got a pint bottle from a fourth-class druggist in the neighborhood and had directions to take a certain quantity every hour or two. After taking about half of it his vision failed and he became deaf. The doctor made an ophthalmoscopic examination the following morning and found intense hyperemia of the disc. He had the contents of the bottle analyzed and found nothing but quinin and whisky. I urged upon the assistant to tell him to come to the private hospital for treatment. He refused and did not send for me again for two weeks, when he said he could begin to see the outlines of the window and his hearing had returned. Three weeks later he came for treatment but at that time there was complete atrophy and he was totally blind.

Dr. ELLETT—In regard to the cases reported by Dr. Lautenbach in which the condition disappeared without cessation of chewing tobacco my former partner, Dr. Minor, has gone him one better and reported eight cases that underwent perfect recovery without stopping either smoking or chewing. Those cases have been rather extensively quoted, but I do not think anybody has profited by them to permit such things in their treatment. The only thing I want to comment on is the age of his cases, which is in striking contradistinction to the literature of the subject. I have only found ten under 30 years of age and none under 20.

Dr. LAUTENBACH—As regards the age of the patients I think there has been one case reported at 19.[1] I called attention to another fact which is that I believe there is a large class of cases which if recognized at first are perfectly curable. I think we can then use a method of treatment that will bring us through our difficulties. Often, especially in hospital practice, our diagnoses are not made accurately enough and often the medicine prescribed and the hygienic directions given are such that the case becomes well—the case not being reported as a tobacco or toxic case, but perhaps simply as a refraction case needing tobacco or alterative treatment to overcome a depraved general condition.

In regard to the matter Dr. Wood spoke of, that it has not been demonstrated that there is any effect upon any other nerve than the optic, we allow in our public schools certain truths to be taught for which we are in part responsible, and you will find in the school books attention called to the arrest of growth, etc., produced by tobacco and alcohol. If it is true that they do not affect other nerves than the optic we should see that things are properly taught. For myself I believe that there is plenty of ground for the belief that other nerves are affected. It is well recognized that by the withdrawal of tobacco in certain cases of deafness we get rapid improvement, and hence tobacco deafness is a recognized disease. Certain heart cases too are said primarily to be due to inhibitory changes in the coronary arteries and I do not see any reason for doubting it. Watch the chronic user of tobacco, his walk and shuffling gait, and the conviction grows that other nerves than the optic are affected.

In regard to the matter of tea, I think the prediction can be made today that ten years hence quite a number of our men will report cases positively due to tea drinking. The Americans have been until recently using the Chinese tea, but now a Ceylon tea, which is far more powerful in its effects upon the nervous system, is displacing it and it is expected that the use of Chinese tea on account of its inferior flavor will soon be a thing of the past. I am sure I have seen cases attributable to Ceylon tea. It is my belief that the whole class of cases we have been considering are due to changes primarily in the nerve, or in the cerebral center, I do not know which, but they all act in the same way and bring about the same result.

Dr. YOUNG—In connection with my paper I have only to repeat what I said at the start: that the cases were indeterminate in my mind. I try to make a differentiation between hysteric amblyopia and those which are not. I should be inclined to classify hysteric amblyopia, as those which by the effort of the patient could be overcome. You know that in the true hysteric cases if you can get the patient's mind off the subject you can promptly restore vision. I used the expression "*nolens volens*" because I do not believe there was anything in my cases that was present *volens* and not *nolens*. One patient, 60 years of age, when I saw him last was unable to recognize me and to count fingers. Treatment enabled him to see sufficiently well to play cards, and I do not believe his death was due to uremic poison, because no casts were found at any examination. I am further fortified by the experience of a colleague recently. A man with enlarged prostate died with symptoms of septicemia, and postmortem discovered a large perineal abscess that had given no evidence by swelling or pain prior to death. My impression is that my case died from septic trouble due to the injury from self-catheterization.

In connection with the calomel treatment I want to say that in only one case did I have control of the exhibition of the calomel and I was unable to enforce upon my friends the necessity for and advantage of small doses of calomel. In the cases that recovered I attributed the result more than anything else to small doses of calomel kept up for quite a period.

I want to endorse what Dr. Reynolds said as to the uncertainty of color sensations in amblyopia and also to say that at the Atlanta meeting two years ago I reported a case of relapsed amblyopia from excessive tea drinking. The case of inverted image that Dr Connor spoke of I should think belongs to the true hysteric amblyopias.

[1] de Schwinitz—Toxic Amblyopias.

ON THE USE OF EPITHELIAL GRAFTS FOR REPLACING THE OCULAR CONJUNCTIVA.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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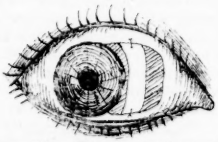
The unsatisfactory results obtained by the transplantation of rabbit's conjunctiva upon the eyeball, the laborious work of freeing from all shreds of submucous tissue the mucous flaps cut out with scissors or scalpels; and on the other hand, the ease with which Thiersch's skin grafts can be obtained and the certainty with which they grow in their new bed, have induced me many years ago to make use of Thiersch's grafts in operations for pterygium, symblepharon and other conditions where it was desirable to replace lost conjunctiva. The results obtained by these operations were very satisfactory; the grafts answered the purpose for which they were implanted; in many instances they became after some time as smooth and glossy as the surrounding conjunctiva; and though in other cases they continued producing a white coating of epidermis cells, I have never found this condition to cause any irritation. Still I have always regarded the substitution of epidermis flaps for epithelial tissue as a make-shift to be abandoned as soon as we should

find a convenient method of obtaining epithelial grafts, for the ideal aim of our plastic work should be to replace mucous membrane by flaps of the same histologic character.

I believe we have now that improved method we wished for, thanks to the ingenuity of the present chairman of this Section. In the *Ophthalmic Record* of December, 1897,[1] Dr. Gifford has shown that the cutting of epithelial grafts is very easy and successful if done with a razor instead of scissors or scalpels. The flaps so cut, he says, correspond histologically for mucous membranes to the Thiersch's skin-flaps; they are cut so thin that only the epithelium and a very little of the subjacent tissue is removed. In other words, Dr. Clifford has solved the problem by applying the principle of the Thiersch's razor method of cutting skin grafts to the mucous membranes, an idea so simple that we can only wonder at that we have not hit upon it long ago.

As to the proper execution of this new method I will quote Dr. Gifford's own words: "Probably the main reason why these thin lip-flaps have not been used more generally, is that it is hard to get at the lining of the lips so as to use a razor easily; and to facilitate the process I have had a large clamp made, of which the solid blade is smaller and set at an angle with the shank so as to pass clear through the fenestra of the other blade. Closing the blade upon the lip forces the latter into a tense prominence from which the membrane can easily be shaved. The surface must of course be kept wet and the razor must



be sharp. In cutting flaps to replace palpebral conjunctiva, it is better to cut them nearly twice as thick as where they are to be applied on the ball. They should be slid directly from the razor to the denuded surface and there trimmed if necessary. After pressing them down rather firmly with moist toothpick swabs, they should be allowed to dry on, so to speak, for two to three minutes before the lids are allowed to close. A binocular bandage should be left on for the first twenty-four hours, and after that a monocular for four or five days. After a few days, a thin pellicle of epithelium is thrown off and what is left is so very thin and transparent that one is at first inclined to think that the whole flap has necrosed, but after some days it becomes evident that the flap is alive, although it is so much like the conjunctiva that its boundaries are hard to trace."

Since reading Dr. Gifford's article, I have employed his epithelial grafts in all cases where formerly I should have used Thiersch's grafts; and it gives me great pleasure to state that the results were so satisfactory that I have no reason to regret having substituted Dr. Gifford's method for my own. I found indeed the flaps could be cut very easily and accurately, and their application offered no difficulty if I only took care to keep track of the side which was to go down on the wound.

For illustration I will report only one case, and I select the very first case in which I tried the new method, because it was a very severe test of its merits on account of the unusually large size of the flap.

February 7 I removed from the eye of a young man an epithelioma of the ocular conjunctiva. The very vascular growth surrounding almost the whole nasal margin of the cornea spread out 12 millimeters over the sclera and invaded the corneal epithelium about 1½ millimeters; the ocular conjunctiva adjoining the lower border of the tumor appeared thickened and opaque. In removing this growth I first detached it carefully from the cornea; then I made an incision in the healthy conjunctiva all around it and finished with dissecting up the episcleral tissue from the conjunctival incision to the corneal margin. The thickened portion of the ocular conjunctiva adjoining the lower end of the tumor was also excised. This operation caused a large exposure of the sclera, which it was impossible to cover by a transplantation of the adjacent conjunctiva.

I therefore decided upon implanting a Gifford's lip-graft. As I had not Gifford's lip-clamp, I used our ordinary eyelid forceps with its fenestrated branch upon the mucous surface of the lower lip. When the forceps was well screwed down the mucous membrane within the ring of the forceps was quickly anesthetized by holocain, and was so tense and prominent that the shaving could be done with the greatest facility and without the least pain. I shaved off an epithelial flap about 1½ centimeters long and ½ centimeter wide. This flap, floating in sterile salt solution, was transported on the razor to the eyeball and spread out over the denuded surface. It was long enough to reach from the upper to the lower conjunctival border of the defect, but too narrow to cover its entire width. I had purposely cut it so narrow because in my first grafting operations when the grafts were cut so large as to cover the whole width of the denuded surface, I usually found them slightly displaced toward the cornea during the first twenty-four hours; and I had come to the conclusion that this displacement occurred because the conjunctival border was in contact with the graft and pushing against it during every lateral rotation of the eyeball, displaced it more or less before it had become adherent. When the graft is cut narrower so that a space is left between it and the conjunctival border, this displacement does not occur, because that free space prevents the conjunctiva from unduly crowding against the graft during the first twenty-four hours; and when later on the conjunctiva is drawn up closely to the graft, this has gained sufficient hold on the sclera that it can no longer be shifted from its place. But to make doubly sure that this graft, which was unusually long, would retain its position, I fastened its upper and lower end to the conjunctiva near the cornea by very fine silk sutures. After the eye had then once more been thoroughly irrigated with boric acid solution, both eyes were bandaged.

On the second day the graft was firmly adherent; the sutures could be removed and the bandage left off. At the end of the first week the gap between the graft and conjunctiva was closed, the conjunctiva having been drawn up to the longitudinal border of the graft. In March, when the patient was shown at the meeting of the Chicago Ophthalmological Society, the graft was smooth and red like the adjoining ocular conjunctiva; and when later on the injection of the conjunctiva, disappeared the graft also became pale

[1] "On the Use of Epithelial Lip-flaps and Half Skin-flaps in Eye Surgery."

and clear. It showed no perceptible contraction, and only the closest inspection could find the dividing line of the graft and the ocular conjunctiva.

DISCUSSION.

Dr. W. L. DAYTON, Lincoln, Neb.—While in Chicago I had a conversation with Dr. Hotz in which he mentioned one of his cases to me, and I determined to try this method at the first opportunity. Last week a patient presented himself with a very large pterygium that extended clear over the center of the cornea, and fully 2 mm. in width at its apex. I resolved to make a mucous graft there from the lip. I performed the operation as Dr. Gifford has suggested, taking a flap 7 or 8 mm. long and 5 mm. wide. In dissecting up the growth I dissected 4 or 5 mm. back from the edge of the cornea and down to the sclera, but as he moved the eye suddenly the conjunctiva tore farther back. I then had my assistant take hold above while I dissected it back to the caruncle and removed it, leaving the conjunctiva intact after having cut down to the sclera 5 mm. from the limits. This left a 5x8 mm. space to fill up with the graft. Everting the lip and outlining the size of the flap desired, I removed the graft with a razor, dropping a few drops of salt solution on the razor, and transferred the graft directly to the eye. I held it in position by placing four sutures, one at either corner. It was allowed to remain until the third morning, when the lower portion of the graft was of a beautiful rosy hue, and the upper portion a little white and slightly loosened. I removed the stitches on Saturday last, and the graft had grown beautifully in its entire extent.

In regard to the use of a local anesthetic, I would say that I have never tried the holocain, but I would not advise the use of any local anesthetic before shaving the graft, for I presume it does not hurt very much.

Dr. G. C. SAVAGE, Nashville—My friend Hotz and I do not always agree, but I believe the best method for dealing with pterygium is that outlined in his paper. Following Hotz, I commenced the transplantation of skin, instead of mucous membrane, and months and months after found it still skin; so I am glad to hear, from his own lips, that it is better to use mucous membrane. My own method of operating is to make a puncture and counter-puncture in the body of the pterygium, not far from the cornea, through these passing one blade of straight scissors, pressing the blades slightly toward the inner canthus before bringing them together, and pull off the corneal portion by traction forceps. A very small portion of the mucous membrane of the lip transplanted will cover almost completely the exposed scleral wound. One suture above will hold it in place, as a rule. My experience from this method of procedure is very happy. I think it should be resorted to in all cases, because so many of the cases operated upon by other methods recur.

Dr. J. L. THOMPSON, Indianapolis—How long have any of you gentlemen seen your cases after these operations have been done?

Dr. HOTZ—This case reported was operated upon in February, and I saw him two weeks before I came here. This was not a pterygium case, however, but I think the same operation applies. I have seen cases treated with the Thiersch graft two years afterward, and the growth had not returned.

Dr. GIFFORD—There is very little to be said except that the suggestion of Dr. Hotz, that where you have a large flap it is better to use a stitch, is a good one. It is a good plan to dissect up the conjunctiva so as to tuck the flap under, and stitch above and below.

With regard to the length of time after they have been operated on, I have one case that I have watched for three years. The eye does not look natural in every way, but the pterygium has not returned, and as it was a malignant case that had recurred five or six times, I was glad to get any kind of a result.

REGULAR CORNEAL ASTIGMATISM IS NOT ALWAYS CONGENITAL, NEITHER IS IT UNCHANGEABLE.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WILLIAM C. BANE M.D.

Late Ophthalmologist to the Chair of Neurology and Chief Clinical Assistant in Ophthalmology and Otology in the Medical Department of the University of Colorado; Ophthalmologist and Otologist to the House of the Good Shepherd; Oculist and Aurist to the C., R. I. & P. Ry.

DENVER, COLO.

That regular astigmatism of the cornea is not always congenital, is clearly stated in some of our standard text-books on ophthalmology. Noyes (2d rev. ed., p. 111) states that "some rare cases of regular corneal astigmatism are acquired, but as a rule the affection is congenital." Schmidt-Rimpler (3d ed. p. 84) believes: "as a rule the affection is congenital." Berry (2d ed., p. 543) says of astigmatism: "The cause is mostly a difference in the curvature of different meridians of the cornea, a difference which may be congenital or acquired."

Hartridge (Refraction of the Eye, p. 122) expresses the view: "astigmatism is usually congenital, but may be acquired, and frequently there is some hereditary tendency." Henderson (Annals of Ophthalmology and Otology, Vol. v, p. 523) has reported one case of acquired regular corneal astigmatism. The literature bearing on acquired regular corneal astigmatism is certainly very limited. To be convinced that regular corneal astigmatism is not always congenital necessitates refractive work on the same persons for many years, during which re-examinations of eyes are made, and the measurements compared. The same rule applies as to the permanency or unchangeableness of regular corneal astigmatism, whether in amount or meridian. I have selected two cases to illustrate the subject:

Case I.—Illustrating the Development of Regular Corneal Astigmatism. E. B., a girl, aged 10 years. Referred by Dr. Eskridge, Feb. 18, 1892. History of pain in her eyes and frontal headache almost every day, while using her eyes for close work in school. General health good.

V.R.=⅝. V.L.=⅝. Pupils are equal and respond normally to light and accommodation. Fields are normal. Manifest 2° Esphoria.

Accepts +0.50 s. for each eye, with vision of ⅝. Radiating lines on the dial equal. Homatropin used as a cycloplegic, under which V. with +1 s. R., and L.=⅝. At confirmatory test, two days later, +0.50 s. was ordered for constant wear. Patient returned Oct. 21, 1893, twenty months after first examination, and complained that her eyes were not comfortable. Another examination was made under homatropin and atropin, with the result that under the cycloplegic she accepted +1 s. for each eye giving vision of ⅝. No manifestations of astigmatism. On Sept. 16, 1896, four and one-half years after the first examination, patient returned, complaining of her eyes aching upon use for close work, and occasionally frontal headache. She has developed rapidly, changing from girlhood to young womanhood.

V.R.=⅝—; V.L.=$\frac{6}{12}$+. Pupils, accommodation and fields are normal. Fundi are healthy in appearance. Hotz' Astigmometer indicated: 0.50 D. astigmatism; axis, 180° in each eye.

O.D. −0.50 c. 180°=⅝. Lines on dial normal.

O.S. −0.75 c. 180°=⅝. Accommodation paralyzed with Wyeth's ophthalmic discs of homatropin and cocain.

O.D. +0.75 s. ⊃ −0.50 c. 180°=⅝.

O.S. +0.75 s. ⊃ −0.50 c. 180°=⅝.

After twenty-four hours a confirmatory test was made and patient accepted −0.50 c. 180° for each eye, giving her vision of ⅝ and equalizing the lines on dial. Forty-eight hours later the test was repeated, with exactly the same results, and the above cylinders were ordered.

This patient came under my care again a year after she be-

gan wearing the cylinders, suffering with an attack of pharyngitis, at which time she reported that her eyes were comfortable, and that she had worn the spectacles constantly.

Case 2.—Illustrating a Change in the Astigmatism, eight years elapsing between the examinations. W. J., aged 24 years. Referred by Dr. John Mahon of Allegheny City, Feb. 11, 1889. History of indistinctness of vision, especially on reading, and occasional attacks of frontal headache after reading for about an hour. The eyelids are inflamed and the margins thickened, some crusts adhering about the roots of the lashes.

V.R. =⅝; L. =⅝. Pupils equal and react normally to light and accommodation. Fields for white normal.

O.D. −0.50 c. 165°=⅝.

O.S. −0.60 c. 15°=⅝.

An eight-grain solution of homatropin used as a cycloplegic.

O.D. +0.50 s. ⊂ −0.50 c. 160° =⅝.

O.S. +0.50 s. ⊂ −0.75 c. 10°=⅝.

At confirmatory test he accepted:

R. −0.60 c. 160°=⅝. Dial normal.

L. −0.75 c. 10°=⅝. Dial normal.

Prescribed two-grain ointment of the yellow oxid of mercury for the blepharitis.

On May 17, 1897, while in Pittsburg, W. J. came to me for re-examination. He stated that his eyes had not troubled him since 1889, when he began wearing the spectacles, until within the past year. The blepharitis is well and has been for several years. Recently he has experienced some aching of his eyes and pain in his right temple. Vision less distinct than formerly.

V. R. =⅘; L. =⅘.

O.D. −1 c. 160°=⅝.

O.S. −2 c. 180°=⅝.

Wyeth's discs of homatropin and cocain used as a cycloplegic.

O.D. +0.50 s. ⊂ −1 c. 160°=⅝.

O. S. +0.50 s. ⊂ −2 c. 180°=⅝.

May 19, 1897, prescribed:

O.D. −0.75 c. 160°.

O.S. −1.75 c. 180°.

The change that had occurred was a slight increase in the astigmatism in the right eye and one diopter increase in the left eye, with a change of ten degrees in the meridian of the left eye.

The first case is one in which the astigmatism developed during the stage of rapid growth of the body. It seems reasonable to me that we might expect some change in the shape or length of the eye, as occurs in other organs of the body during the period of rapid growth. It is the age when myopia does develop and increase.

It will be noted that both the cases I have reported are cases of myopic astigmatism. The one reported by Dr. Henderson changed from emmetropia to myopic astigmatism.

One point naturally comes in here for consideration, i. e., can we say to our patients under 40 years of age that no change will be required in their glasses until presbyopia becomes manifest? With me, and I presume it has been the experience of others, not a little of my refractive work has been the measurement of eyes that have already been measured by other physicians. In not a few cases I have found that the glasses ordered for the patients were not suitable. They may have been of the proper focus at the time ordered and the eyes have changed in the meantime. Hence it becomes us to be on our guard to avoid criticising a brother practitioner's work, when our findings do not correspond.

It is a question as to what proportion of the cases I have seen, that were not wearing proper glasses, was due to improper correction and what proportion due to changes in the eyes. I know some physicians will hold that the errors in the class of cases I have reported were not corrected in full at first. I admit such mistakes are made, and I presume I have made some of them. We have cases of amblyopia, in which it is quite impossible to be positive of the accuracy of our correction, even with all the modern methods and appliances.

If, with this brief presentation of the subject, we may have a free discussion of it by the members who have had an extensive experience in refractive work, and their views placed on record, my object in bringing this subject for your consideration will have been attained.

Steele Block, 16th and Stout Sts.

DISCUSSION.

Dr. F. C. HOTZ, Chicago—The closing remark of the Doctor alludes to cases we have all seen that have gone through the hands of our colleagues, have been refracted by them, and in which we find that our examination would not confirm or sustain the prescription for glasses which the patient received at the former examination. If the eyes have changed in a considerable number of these cases, it should certainly put us on our guard and keep our mouths shut as to what we think of the glasses the patient has. When I read the title of the paper in the preliminary program it interested me particularly, because just at that time an old patient of mine had returned, showing a decided change in the astigmatism. I therefore went over the records of this year and last in my case-book to get an idea how many cases I might fish out that had returned. The trouble is that a great many patients who consult us, if the glasses become unsatisfactory in time, go to some one else for the second examination, and we never know whether their astigmatism has changed or not. I was surprised, though, in such short space of time, a few months more than a year, to come across a half dozen cases that I had examined years before, and in which a re-examination now showed a marked and interesting change in the astigmatic condition. The examination of the past had been made under mydriasis and the re-examination was made under the same conditions. If in the first instance atropin had been used, I used the same in the re-examination, and if at first it was homatropin, I used the same drug again, so the conditions of the examinations were absolutely the same, and if the results differed, it must have been due to change in the eye during the intervals. In one of my cases examined in 1887 each eye then needed —.75 D. cyl., and in 1897 each eye needed — 1.50 D. cyl. A second case shows a change from emmetropia to a high degree of myopic astigmatism. In 1887 the patient, then 20 years of age, after recovery from an attack of iritis and while the eyes were still under the full effect of a mydriatic, showed emmetropia. In 1889 the left eye showed a myopia of 6 D. with astigmatism of —3.50 D. cyl. ax. 15. In the spring of this year the condition has changed to a myopia of 7.50 D. in one eye, with —5. D. cyl. ax. 15.

A third case shows in 1890, right eye required +3. D. cyl. In 1893 it required a — 1. D.s. with + 4. D. cyl., and in 1897 — 2. D.s. with + 5. D. cyl., showing that while one meridian retained its hypermetropia, the other became myopic. Then I came across three cases in which hypermetropic astigmatism had increased. This is most remarkable, because we know from statistics that if the eye is changed during school life, the tendency is to develop myopic conditions.

Dr. G. C. SAVAGE, Nashville—On my arrival I told Dr. Bane that he had made but one omission, and that was in leaving out the ophthalmometric measurements. That these changes take place no one can deny, but where it takes place is a matter undecided. In the first place allow me to say there is one of my patients who has never been able to get away from me, that is myself. In Philadelphia where they do refraction work to perfection, I was given a —.50D cyl. and a little later I found I was not fully corrected until I used a —1.50D cyl. axis vertical. A little later I found still more, and nine years ago the first ophthalmometer I ever saw, in the office of Dr. Swan N. Bur-

nett, showed —2.25D cyl. in each eye. I am wearing that glass to the present time. What does this mean? I believe the radiating fibers of the ciliary body help to correct the astigmatism, and that they are not under the control of the third nerve. I do not believe they are reached by the mydriatics, and hence it is impossible to control them except by teasing out the astigmatism. A slight contraction of the meridianal fibers will tilt the lens one way and those of another portion will tilt it another direction, and astigmatism is increased at right angles to this tilting. I think my case and others which I have observed, show that we have seldom, if ever, any increase of the corneal astigmatism, but that the increase is due to tilting of the lens, and we must tease this out until we get the maximum of astigmatism, when a given lens will serve its purpose forever.

Dr. H. V. Würdemann, Milwaukee—I wish to mention one factor in the correction of astigmatism that has not been spoken of, that is lid pressure. We all know that intense blepharospasm or a chalazion will produce astigmatism, which after the spasm or pressure has been relieved, passes away. Now there are some patients with astigmatism against the rule, who are in the habit of correcting it in part by lid pressure. We totally correct the astigmatism as it appears and we find the patients relieved, but if we examine them later we find a recurrence of astigmatism, the elasticity of the cornea having asserted itself, and instead of, say 2 diopters of corneal astigmatism, we find 3 or 3½ to correct.

Dr. T. A. Grigg, Butte, Mont.—I have listened to these papers with much interest and can not wholly agree with most of the speakers on the subject. My opinion is that the astigmatism that has not been fully corrected. It was there, and the mydriatic, homatropin or atropin has not been used in sufficient quantity, or not long enough to overcome the defect. Again, in young people the elasticity of the lens is great, and you will often see those people that have a considerable amount of astigmatism, as much as 2 or 3 diopters, who before you used any mydriatic in the eye could possibly read ⅝ quite distinctly and who after you have used the mydriatic could not read more than about half that amount, and at the same time you would not have fully overcome the ciliary muscle. One of the gentlemen spoke of using tablets of cocain and homatropin. It has been my experience in using cocain that it produces an astigmatism itself, that it acts upon the corneal epithelium and gives, as it were, a false astigmatism. I know that in old people past 45, where I was timid about using atropin and used cocain, so as not to produce a glaucomatous condition, I have produced an irregular astigmatism, which I could not bring out later on when I tried again to refract the eyes. I think if the physicians present today will watch their cases where they use cocain to dilate the pupil and overcome the action of the ciliary muscle, and will later on refract these eyes again they will note entirely different results. I remember an aphorism I read in a little book, I think written by Dr. Fox of Philadelphia, which is that astigmatism is an invisible and subtle child of the devil, whose hiding place is the ciliary muscle of the eye, and he is said to hate atropia as his father hates holy water.

Dr. Minney—I have noted this difficulty ever since I began to practice ophthalmology, and I supposed it was due to two causes, first, because I had not the ability to fit these patients, and, second, because some changes did take place. I do not know why these changes can not take place, and I think we must believe that they do.

Dr. J. L. Thompson, Indianapolis—The gentleman is correct about that, and I am not surprised at anything that can take place in the eye. It is true that if I took one out I should be surprised to see it grow in again, but nothing short of that would astonish me. I have seen cases that I examined years ago and gave them plus cylinders, and when examined again ten or fifteen years later, I found that they had changed from positive to negative astigmatism. You will see some gentlemen writing today that they can calculate, in cases of myopia where they propose to remove the lens, what glasses the patient will have to wear afterward. They know nothing about it. One can not make such mathematical calculations for the human eye.

Dr. Edward Jackson, Denver—The subject brought before us is one well worthy of study, and when we have accumulated enough definite facts bearing upon it, we shall know a great deal more about the changes that lead to astigmatism, and the ways of influencing it aside from correction by glasses. In 1890 I reported to the American Ophthalmological Society, a series of 18 cases of increase in hypermetropic astigmatism. I was interested in the subject first by my own case, which was similar to that of Dr. Savage. There was no question, I think, as to the refraction at the first measurement. My eyes were measured repeatedly in experimenting with different mydriatics, requiring .50D cyl. for one eye and .75D cyl. for the other. After two or three years of hard eye work with a microscope, etc., I found something wrong with my glasses, and an examination then showed that the astigmatism had increased to 1.25D in each eye. Two or three years later they showed 1.75D in one eye and 2D in the other. That was over eight years ago, and it has remained entirely constant since that time, though I have been examined within the last year.

My earlier histories of such cases are not good, because I did not then use the ophthalmometer in all cases. But I can say now that these changes in astigmatism do not depend in all cases upon change in the cornea, nor are they in all cases independent of this. Perhaps the ophthalmometer will be of some value in practice for this purpose. I hold it to be of very little practical value unless it will be in this way, to follow up and detect the changes in the cornea. Astigmatism against the rule is more apt to arise after the age of fifty than before, which looks as if these cases were dependent upon some change in the shape of the lens, or its position, I think likely the latter.

Dr. H. B. Young, Burlington—With one exception I believe I am a doubting Thomas in regard to this change and I would like to remind Drs. Savage and Jackson that in their arguments I think they proved the opposite of what they intended. They stated that when they got to a certain point their astigmatism remained steady. If the conditions were changing, why did they stop eight or nine years ago.

It has been my fortune to examine quite a number of cases of what is popularly known as second sight; the refusal of glasses by people of 60 or 70 years of age, who have been using glasses previously. In examining nearly all of those cases I have found beginning opacity in the periphery of the lens and all showed a development of astigmatism against the rule. We find an astigmatism of this kind after operating upon cataract and the question arises in my mind whether that is purely an aphakic astigmatism that we see after cataract operation.

Dr. C. E. Norton, Lewiston, Me.—Some years ago I had a case that bears on this point and I am sorry that I can not at present give the exact facts concerning it. It was a young man who came to me with a difficult error of refraction and on examination I gave glasses that were satisfactory for some time. He came to my office later with a chalazion of the lid, not giving him any pain, but he was prepared to find his sight in that eye defective and thought he could not see distinctly with the old glasses I had given him. In my first examination I had used the ophthalmometer and had a record of the findings. In the second examination, in which I also used the ophthalmometer, I found that there had been a change in the corneal astigmatism, but having about that time read of a similar case I thought it possible that this might be due to pressure of the tumor and suggested that we operate on the lid before making any change in the glasses. This was done, and in the course of a few weeks his vision had improved and the

ophthalmometer showed the same record it did in the first examination. I do not remember where I read the account of the tumor in the lid that changed the corneal astigmatism.

I think this question opens a field for investigation and I do believe that in the ophthalmometer we have an instrument of great accuracy in estimating the corneal astigmatism and I think this study of Dr. Jackson's will be extremely interesting. I differ with him as to the practical value of the ophthamometer in office work for I use it constantly and feel that it is one of the most important instruments that I have. It is well known that many of the New York oculists have much faith in it, while the Philadelphia men, as a rule, have none.

Dr. HENRY GRADLE, Chicago—I would like to quote the most extreme change in the degree of astigmatism I have witnessed. A girl of seventeen years, examined in 1892, showed a myopic astigmatism of 1.50 D cyl. ax. 180. The tests were so decisive and the vision so perfect ($^{20}/_{20}$ corrected) that no mydriatic was used and the patient was fully satisfied with the glasses. She returned in 1894, stating that the old complaint had returned, but she had been free from discomfort for four years. I found now 4.50 D cyl. with the rule and with the best correction scarcely more than $^{20}/_{40}$ vision. Under a mydriatic the astigmatism remained the same, but 1 D of hypermetropia in the opposite meridian was brought out, making the refraction now—Sph.+1 with Cyl.—4.5, axis horizontal.

I have seen two instances where astigmatism had been produced by the pressure of a chalazion and where the subjective findings changed completely within two weeks after removal of the tumor.

Dr. BANE—The facts that I wanted have been brought out. Certainly the remarks that have been made prove that astigmatism does change, both in amount and its meridian. As to the latent astigmatism theory, I think it is hardly tenable. The gentlemen who have spoken have nearly all used mydriatics to an extent which would have brought it out if it were present.

THE CONSERVATIVE TREATMENT OF EPIPHORA AND AFFECTIONS OF THE LACHRYMAL APPARATUS.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY S. D. RISLEY, M.D.
PHILADELPHIA.

It is the purpose of this paper to urge the importance and value of conservatism in the treatment of lachrymal obstruction. The ophthalmic surgeon meets with no more numerous, annoying or persistent class of affections than those involving the lachrymal apparatus, especially that part constituting the drainage system. Pathologic processes affecting any portion of this delicate apparatus lead to a partial or complete closure of its lumen and thus obstruct the flow of tears from the eye into the nose. The symptoms of lachrymal retention and the secondary consequences are too well known to require any extensive recital. It should however be borne in mind that the ocular affections which often precede or cause the disease of the lachrymal passages, become chronic and persist against all measures of treatment by virtue of the evil results of the retained tears, thus constituting a vicious circle, to be broken only by the judicious treatment of the lachrymal obstruction. The retention of tears may be partial or complete, bearing more or less definite relation to the degree of obstruction in the drainage system. Partial closure of some portion of the duct may exist and cause no notable obstruction to the outflow of the tears except under circumstances which increase the requirements by producing excessive secretion, e.g. when the emotions are excited or on exposure to strong winds or irritants, or by the still further contraction of the tissues caused by exposure to cold. These minor cases of partial retention are doubtless frequently overlooked, and the eye treated by washes and astringents directed to the cure of mild forms of chronic conjunctivitis caused by the retained tears. The obstruction may be at any part of the drainage system; e.g. at the puncta, one or both, in the canaliculi, lachrymal sac, or nasal duct, or, by a closure of the duct at its nasal orifice from swelling of the tissues overlying the inferior turbinated bones.

A very frequent cause of partial retention is a more or less complete obliteration of the inferior punctum, or a narrowing of the lumen of the canaliculus, the sac and nasal duct being normally patulous. In these cases it is usually necessary only to dilate the punctum, or punctum and canaliculus by a delicate needle probe, a single dilation often effecting a cure. It should be done without sufficient violence to set up inflammatory reaction, which might increase instead of relieving the contraction. If the trouble is in the punctum alone it is occasionally necessary to cut its sphincter muscle, and thus to convert it into a slit. Where the obstruction is confined to the punctum or canaliculus it is obviously unnecessary to subject the patient to the annoyance and pain of probing the nasal duct. The absence of obstruction in the sac or nasal duct can be determined by the ready flow of a stream of warm boric acid, or salt solution, injected through the dilated punctum or canaliculus, by inserting the fine point of a suitable syringe. If the solution flows freely into the nose it is obvious that the sac and nasal duct are patulous, but should it flow backward into the conjunctival sac through the upper canaliculus it is equally plain that these passages are occluded and some estimate as to the locality of the obstruction may be made by the quantity of fluid injected before the return current is observed. A fine bulbous probe may then be inserted, without slitting the canaliculus, in order to explore the passage. If it passes through the duct readily, meeting with obstruction only at the nasal orifice, the nasal passages should then be carefully studied and any existing disease properly treated. A few cases of lachrymal retention need no other treatment than to free the nasal end of the duct from existing synechia between the inferior turbinate and the floor of the nose, or from hypertrophy of the mucous membrane surrounding its orifice. My attention was first called to the importance of nasal disease in causing lachrymal obstruction in 1879. I had treated a gentleman for many weeks quite unsuccessfully by probing the duct, after slitting the canaliculus. He called my attention to some discomfort he was suffering in the nostril of the same side. A superficial ulcer was discovered on the floor of the nose which spread itself into the region of exit of the nasal duct. After careful cleansing this was painted with a solution of nitrate of silver. He returned on the second day with the ulcer quite healed, and his lachrymal retention cured. In some cases therefore it is important to explore the nostril before adopting radical measures addressed directly to the lachrymal apparatus. In my experience these cases of nasal disease furnish a relatively small percentage of the cases of the retention of the tears but are still sufficiently common to

suggest a routine study of the nose in all cases. The obstruction exists however, in the vast majority of cases, in some portion of the nasal duct and usually at or near its upper end. Considerable variety is presented both as to the degree of obstruction presented to the flow of the tears, and the nature and extent of the constriction in the duct. These variations manifest themselves in the symptoms and history of the affection, and to the prudent surgeon suggest widely differing methods of treatment. In a comparatively limited group of patients I have found a thin paper-like stricture situated at the bottom of the lachrymal sac, and spreading itself like a membrane over the orifice of the bony nasal duct, effectually preventing the exit of the tears. In these cases a fine Bowman's probe can be forced through the membrane, and the rent thus made may be dilated afterward by successively larger probes, but the stretching or dilation affords only temporary relief since the membrane very soon contracts again and the obstruction is once more complete, the membrane becoming thicker, more dense and unyielding with each repetition of the procedure. This group of patients furnish the only examples where cutting operations are justifiable or efficient for permanent relief. A probe-pointed knife, much after the pattern of the Webber's canaliculus knife, but with a longer shank, which should be ductile, is suitable for cutting the membrane. Dr. H. C. Thomas of Philadelphia, exhibited such a knife to the Section at its Detroit meeting in 1892. Its probe point can be pressed through the constricting membrane and the knife made to follow, enlarging the opening by incision. By slightly turning the instrument on its long axis, a second incision can be made on withdrawing it. The process can be repeated in different diameters of the duct as often as desired. After the blood clots are washed away, a Bowman's probe sufficiently large to fit the lumen of the duct snugly should be inserted and allowed to remain for half an hour. When withdrawn the duct should be washed again with a boric acid solution. On the second day the probe may again be introduced and allowed to remain for half an hour. This will in some instances suffice to effect a cure, but the duct should be subjected to occasional inspection by syringing or gentle probing, in order to anticipate any tendency to recurrence. This class of cases have however, in my experience been comparatively rare.

The cases where the obstruction is found in some portion of the bony duct have been far more numerous than any other variety, the next in frequency being located at the inferior punctum or in the canaliculus. Statistics on this point however, as far as I know, are wanting. The obstruction in the nasal duct is as a rule due to a more or less extended narrowing of the lumen of the duct by a thickening of the soft tissues which line its bony walls. The readiness with which, in some individuals, the duct may be entirely closed or its caliber so diminished as to obstruct the flow of tears, will be made manifest by any study of numerous dried or frozen preparations of the bony duct. Such a study reveals great variety in the size and contour of its walls. The irregularities in the surface of the osseous walls of the nasal duct in many individuals obviously render them especially liable to its ready obstruction from even a slight thickening of the lining membrane. While the duct may be large and even abnormally capacious in some parts of its course, forming lake-like expansions, in other portions bony projections or irregularities of surface contract its diameters to a narrow channel or a mere slit; or produce a tortuosity of its course which explains the difficulty which is often experienced in passing a probe into the nose, even in cases where fluids pass quite readily. The probability of these anatomic peculiarities being present in any case of lachrymal retention should always be borne in mind, and in the adoption of methods of treatment should suggest conservatism in surgical interference. Any violent effort to force a probe through the canal in these cases may very readily cause a traumatism far more serious in its results than the disease we are attempting to cure. If, for example, the canal is tortuous, or if ledges of bone project from its walls the end of the probe is liable to infringe upon the bony surface, and attempts to force it onward are likely to cause a tear in the lining membrane which will allow the probe to pass between the soft tissues and the bone. If these tissues are already the subject of chronic inflammation and thickening, the acute exacerbation caused by the traumatism, and the accumulation of coagulated blood between the bone and mucous membrane lead to increased thickening and a still more complete retention of the tears above the obstruction. I believe that more or less serious injury is often done in this way by converting comparatively simple cases of retention into practically incurable obstruction of the duct. After this accident the most careful manipulation is required in order to prevent its recurrence at every subsequent attempt to probe the duct. When it occurs the grating of the probe against the bone and the subsequent bleeding are sufficient evidence of the accident and no further attempt to pass the probe should be made until the wound has had sufficient time to heal. The duct should, however, be carefully and repeatedly cleansed by warm aseptic and slightly astringent solutions. In long-standing cases the lining membranes of the duct often seem not only thickened, but spongy and friable, so that it is extremely liable to be torn or perforated, especially if too small probes are employed. The size of the probe to be selected is of much importance. The great variation in the size of the osseous duct in different subjects suggests caution at this point. If too large a probe is forced through the passage, not only may the inflamed and friable membranes covering its wall be torn away and driven before the end of the probe, but the fragile projections of bone which encroach upon its lumen may be fractured. This certainly can be necessary in very few instances, if ever, and the results following such violence may be of more serious moment than the original disease. That this accident is probable as the result of using too large probes I demonstrated before the Medical Society of the State of Pennsylvania in 1878. In a group of skulls sent to me by the late Prof. Harrison Allen, there were two in which the nasal ducts were too small to admit the smallest of a series of large aluminum probes, and not one of them would admit the largest probe of the series without a fracture. It may be argued that such a fracture need not be a serious contingent or even that such an enlargement of the bony duct might not be necessary to effect a cure. I can conceive of cases of total obstruction where this might be preferable to obliteration of the lachrymal sac, or to consignment of the patient to life-long stillicidium with the ever-present liability to recurring attacks of acute blennorrhea, or of phlegmon of the sac; but under all ordinary circum-

stances such violence should certainly be avoided.

The violent methods too frequently pursued in the surgical treatment of lachrymal obstruction, as in cutting operations and in the forcible passing of very large or conical probes, seems to the writer to be based upon a misconception of the physiologic function of the parts. While the function of the apparatus is to drain the eye of tears, the duct is not in health an open drain pipe through which the tears flow by gravity, but is a delicate pump, the pumping force being the act of winking. This delicate function is disturbed or destroyed by any operation, which opens widely the inferior and common canaliculus up to the entrance into the sac, and converts the nasal duct into a permanently broad, open tube. It gives ready access for air from the nasal passages to the eye so that in the act of blowing the nose the contents of the duct are forced back into the conjunctival sac. The design should be to cause the disappearance by absorption of the thickened or hypertrophied soft tissues which produce the obstruction to the normal exit of the tears. In comparatively acute cases, that is to say, when the obstruction is of recent origin the existing pathologic conditions may frequently be cured by the same methods adopted in the treatment of analogous conditions of the conjunctiva, viz., by the use of aseptic washes and mild astringents. After dilating the punctum the fine nozzle of a syringe may be introduced and a few drops of a 4 per cent. solution of cocain introduced into the sac, and if possible, forced through the nasal duct. If the latter is not possible at first it may become so in a few moments by virtue of the shrinking of the swollen and congested tissues through the action of cocain. The sac and duct may then be thoroughly washed with a warm saturated solution of boracic acid, or other wash, e. g. an alkalin antiseptic solution, Dobell's solution, etc. After this has been accomplished a few drops of a solution of sulphate of zinc gr. ii to f℥i or a silver nitrate solution gr. i to f℥i may be introduced. The patient should then receive a wash to be employed at home, and be instructed to instill it freely into the conjunctival sac, after emptying the lachrymal sac by pressure, and then by rapidly winking, pump it into the sac and again empty it by pressure. This can be repeated again and again, three or four times daily between the office visits. I have many times, in cases of brief duration, succeeded in effecting a cure by this simple means and have thus avoided any mutilation of the apparatus and caused no pain to my patient. A few drops of a solution of cocain prevents pain even from any necessary dilatation of the punctum. In chronic cases, however, attended with more or less blennorrhea of the lachrymal sac, with much thickening and sponginess of its walls, and showing well-marked and rigid stricture of the nasal duct, the treatment required is quite different and much more exacting and tedious.

In my experience, however, cutting operations are followed by only temporary relief and a subsequent contraction which makes the stricture worse than before, unless a style is introduced and worn until the tube is converted into a patulous drain pipe, through the complete atrophy and change of the tissue by pressure. This I think should be avoided, and fortunately in the majority of cases is not necessary. In a few instances I have found this the only recourse, but such cases are certainly rare.

The object in view in cases of closure through hypertrophy of the lining tissues of the duct is to cause the absorption of the thickened tissue and at the same time to remove the inflammatory conditions which are still present. As long as the duct is closed entirely or partially we have to contend with one of these vicious surgical circles. It is futile to endeavor to cure the inflammation of the conjunctiva, lachrymal sac and duct as long as the tears are retained. It becomes necessary therefore to open the duct so that the tears can flow away. This can be temporarily effected, usually by passing a suitable probe through the duct into the nose. The method devised by Mr. Bowman is the best thus far devised.

A probe sufficiently large to pass snugly through the constricted area should be cautiously passed, after the instillation of a few drops of cocain solution, and allowed to remain twenty to thirty minutes. The patient soon experiences an increasing sense of pressure and throbbing. The attempt to withdraw the probe will usually require more force than was needed for its insertion. The duct should then be flooded with a suitable wash, followed by an astringent. The theory for such treatment is the gradual absorption of the hypertrophy by pressure of the thickened tissue between the probe and the walls of the duct. The absorption is in some instances aided by washing the duct with a weak solution of iodin. This solution can be readily made as needed by dropping Lugol's solution of iodin into distilled water, until it assumes a light wine color. In many patients the treatment may be repeated with benefit on alternate days, while others require longer intervals of rest. That these conservative measures of treatment are successful in the majority of patients I have had abundant opportunity to demonstrate. When success is not reached it will be found that some marked anatomic defect is present in the duct itself; or that the turgidity of the soft tissues is maintained by pressure through anatomic defects or pathologic conditions in the nose; or, that some constitutional vice is present. In such cases treatment must be addressed to these collateral conditions before a cure can be expected.

In a large group of cases the congested state of the lachrymal drainage system seems to depend upon eye strain due to refraction errors, or abnormalities of ocular balance, the turgescence of the membrane lining the duct being common with that of the caruncles, the conjunctiva and the intraocular membranes. I have many times seen the lachrymal retention disappear with the cure of the intraocular conditions by treatment and the use of correcting glasses without any treatment addressed directly to the lachrymal apparatus.

COLPOPERINEORRHAPHY AND THE STRUCTURES INVOLVED.

DEDICATED TO DR. THOMAS ADDIS EMMET AND MR. LAWSON TAIT IN RECOGNITION OF THEIR LABORS IN THE SURGERY OF THE PERINEUM.

BY BYRON ROBINSON, B.S., M.D.
CHICAGO, ILL.

Continued from page 650.

In 1887 Dr. Hadra of Texas contributed some valuable articles on the subject of perineorrhaphy. He suggested vivisection of the posterior vaginal wall for colporrhaphy, as is done in anterior colporrhaphy. Since 1880, the laborers in the field are legion. Gradually the operation of perineorrhaphy was modified

from Paré, Baker-Brown, Dieffenbach, Langenbeck and Simon to Tait and Emmet. The modification consisted in denuding not only the perineal tears, but also denuding higher up in the posterior vaginal wall. Hildebrandt especially carried the denudation well up into the posterior vaginal wall.

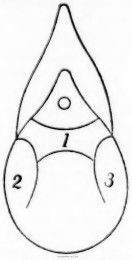


Fig. 18A.—Emmet's operation (elytrorrhaphy posterior) for prolapse; 1 and 2 show the lines of union of denuded surfaces in the vaginal sulci on each side of the vaginal column, 3, which still remains.

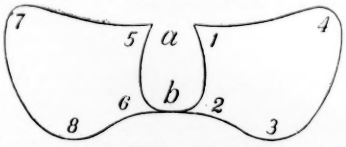


Fig. 18B.—Staude's operation (elytrorrhaphy posterior) for prolapse; 1, 2, 3, 4, and 5, 6, 7, 8, represent the denuded vaginal sulci: *a*, *b*, shows the intact column, which is utilized in coaptation and fixation of the denuded surfaces. The principle of saving and utilizing the column is the same as in Martin's and Emmet's operation.

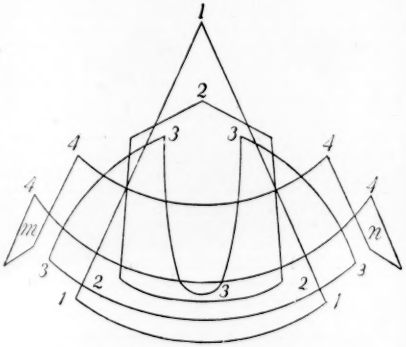


Fig. 18C.—Various shapes of the denudation in posterior elytrorrhaphy, represented by superimposed diagrams: 1, 1, 1, Hegar's; 2, 2, 2, Simon's; 3, 3, 3, Bischoff's; 4, 4, 4 *m*, *n*, Winckel's. Observe that Bischoff saves the column.

As regards suture material, Sims, Thomas, Emmet and others worked out the application of metallic wire to plastic labors on the perineum during the past thirty years. The modern tendency is to use silkworm gut as a non-absorbable suture. This may be left weeks in a wound, and acts as a splint in coapting the surfaces. It is easy to remove. To Dr. T. A. Emmet is due the credit of introducing a method of perineorrhaphy which, until recently, was the one generally practiced in America. In 1883 Dr. Emmet published a new method, or rather a modification of his old operation. Dr. Emmet denudes the sulci on each side of the vagina and extends the perineum forward. His operation is intended to repair perineal fascia and muscles. Dr. Emmet holds that loss of support following laceration is not due to injury of the perineal body. The loss of support after childbirth, he claims, is due to rupture of perineal muscles and fascia. Dr. Emmet's operation is difficult to make clear by description, but it consists in lateral denudation wholly within the vagina to such an extent that when the sutures introduced are drawn tight, the excess or slack in the posterior vaginal wall disappears. The ostium vaginæ is not interfered with by any special denudation. The claim of his operation is that discomfort disappears immediately after, and also that the posterior vaginal wall is brought in proper position and relation to the anterior wall, as it is in the normal condition. The view contained in the surgical procedure is that the perineal body is insignificant in support, and that laceration of it alone impairs but little the integrity of the genital supports. But the tearing or excessive stretching of the perineal muscles and fascia at their attachments to the genitals quickly disturbs the delicate balance of the pelvic organs. There is one point against Dr. Emmet's operation, and that is the relatively blind method of introducing the higher sutures. In other words, the deep layers of the lacerated pelvic fascia may not be included in the sutures with any degree of certainty. Dr. Gillwyly added the idea that Dr. Emmet's operation would be improved by denuding the posterior vaginal wall a considerable distance and then continuing the denudation well up into the posterior vaginal sulci. This method, however, sacrifices a larger amount of posterior vaginal wall.

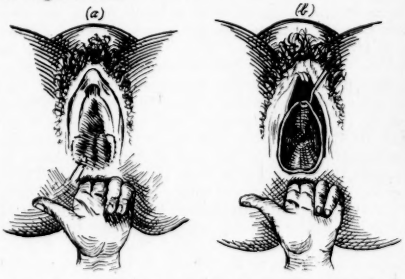


Fig. 19 *a* and *b*.—Dr. Jenks' method (flap) of perineorrhaphy. The flap-splitting is executed with two fingers in the rectum, and a scalpel. In *a* the flap is marked out by a dotted line; in *b* the flap is completed, ready for suturing.

About 1872 Mr. Lawson Tait of Birmingham, England, began to introduce a method of perineorrhaphy known as the flap method. It differed from all others in that he used elbow scissors and introduced the very deep sutures without penetrating the skin or mucous membrane. It involved no loss of tissue. The direction for doing the Tait operation is to resplit the old cicatrix. It is modified according to the condition of the case, as one may produce anterior and posterior cuts. Tait's flap perineorrhaphy is now quite generally practiced. I have not attempted to give all known historic methods of perineorrhaphy, but simply the chief ones, out of which has been built the modern operation.

GENERAL INDICATIONS FOR PERINEORRHAPHY.

1. To restore rectal and vaginal functions.

2. To restore pelvic fasciæ and muscles. Normal fascia is required for normal circulation.

3. To restore the normal relation and support of the posterior wall (colporrhaphy posterior). The posterior vaginal wall sustains the anterior vaginal wall and bladder.

4. To provide as much support for the pelvic organs as the restoration of the perineal body will afford.

5. To remove the neurasthenic conditions; to relieve the innumerable nervous associations; in short, to relieve mental and physical disturbances.

6. To repair and check sacropubic hernia.

7. To narrow relaxed pelvic outlet.

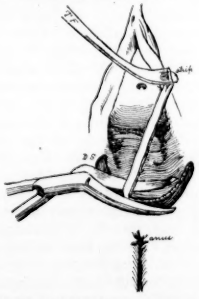


Fig. 20.—Method of denudation of vaginal strips, with curved scissors, from one side of the vagina to the other, as suggested by Dr. Skene.

The pelvic floor is closed from behind forward by the pyriformis with its thin, delicate fascia, the firm sacrorectal ligaments, the coccygeus with its moderately strong fascia, the levator ani muscle with its levator ani fascia superior and inferior, a strong double fibrous protective muscular sheath, and also the triangular ligament, a powerful layer of fibrous tissue. The coccygeus with its fascia, the levator ani with its double fascia and the triangular ligament practically constitute the pelvic floor and seem to separate the pelvic cavity from the perineum. These are essential structures in colpoperineorrhaphy. The levator ani fascia (both layers) pass from the side of the pelvis to the viscera, firmly attaching themselves to every pelvic organ, forming the strong, fibrous expansions known as ligaments, which serve to hold the pelvic viscera in definite fixed relations. In perineorrhaphy, success depends on the restoration of these vital supports; a significant anatomic fact in pelvic pathology is that the blood-vessels lie superior to the pelvic fascia and the nerves inferior to it. The blood-vessels which arrive in the perineal region pierce the pelvic fascia and pass chiefly out of the great sacrosciatic notch.

The levator ani fascia, superior and inferior, is an important structure to limit infection. It separates the ischiorectal fossa from the pelvic cavity proper where so much loose tissue exists. The levator ani fascia is pierced by vessels and nerves, and these vessels and nerves are surrounded by lymphatic sheaths which are a source or path by which the infection may travel from the pelvis to the ischiorectal fossa, and vice versa. In perineorrhaphy the levator ani fascia, superior and inferior, is incised. The operation which is performed for the restoration of the perineum exists under different names. It may be termed perineorrhaphy, perineo-vaginal restoration, perineal extension, perineauxesis, or the flap method. However, I think the best name is colpoperineorrhaphy. Colpoperineorrhaphy is an operation to restore the integrity of the supports of the sexual organs. These supports include those of the peritoneum and vaginal sphincter apparatus.

The perineal body is situated between the lower end of the vagina and the rectum. Difference of opinion still prevails as to the utility of the perineal body in the economy of the female genitals, but, from many dissections and considerable work on the subject, I claim the following functions for the perineal body:

1. It sustains the lower ends of the anterior rectal wall and posterior vaginal wall.

2. It supports and directs the discharging end of the vagina forward, aided by the triangular ligaments and levator ani.

3. It supports and directs the discharging end of the rectum backward; the rectum is directed backward by the levator ani muscle.

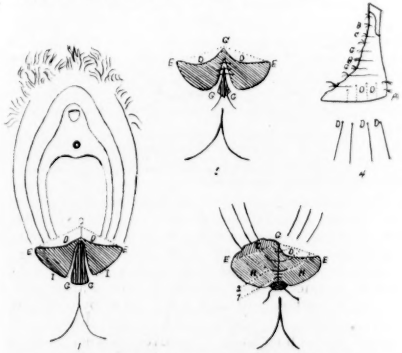


Fig. 21.—(After Pozzi.) LeFort's (1889) method, which is similar to Demarquay's (1864-1875) and Richert's. An incision is made in the vagina at the point C, in the median line down to the rectum; then an incision is made along the line C, D, E; another line, C, G, is carried along the rectal wall, but not into the rectal mucosa; another line joins it by means of E, I, G; this makes a distinct triangle, H (seen in No. 3); the cicatricial tissue is removed from the triangle, H, and also the portion of the vaginal wall, marked D, is seized and dissected from the rectal; the space denuded is D and H (No. 3); the sutures are introduced as shown in Nos. 2 and 3. The disposition of the sutures are noted in No. 4. The operation is a partial flap method, but too complicated for ordinary practice.

4. It not only keeps the discharging ends of the rectum and vagina widely apart, but it gives both a support in a curved direction at their termination, thus affording mechanical advantages for maintaining closure of both apertures and preventing the easy escape of the contents of either canal. The wide divergence of the two canals avoids mingling of the secretions and consequent irritation from decomposition. The backward hook of the rectum and the forward hook of the vagina is an important factor in support, and prevents gaping. The perineum is the skin between anus and vagina. The perineal body consists of skin, fat, muscles, fascia, elastic tissue, and connective tissue. The perineal body as a support in itself for the genital organs has been much overestimated.

5. It serves as the point of union of four muscles: the levator ani, the sphincter ani, the bulbo-caverno-

sus, and the transversus perinei. It serves also as a point of union of the various fasciæ.

6. It acts as a partial support of the pelvic floor.

7. It strengthens a tried point in labor.

8. Laceration of the perineum to any considerable extent destroys the nice balance between anatomic structure and physiologic function in the female genitals.

The object of perineorrhaphy is: To restore partial ruptures; to restore rectal functions after complete ruptures; to prevent prolapse of the pubic segment of the pelvic floor.

The methods of performing perineorrhaphy are: denudation with fixed coaptation, and the flap method. The etiologic factors of lacerations are labor, coitus and trauma. Partial laceration of the perineum may be accompanied by vulvar patency; increased vaginal secretions; irritability of parts; pathologic condition of nerve structure; neuralgic or neurotic conditions induced by long-continued local lesions; descent (distentions) of anterior rectal wall; posterior vaginal wall, and the uterus. Complete laceration of the perineum may be accompanied by vulvar and anal patency; increased vaginal and rectal secretions; incontinence of bowel contents and occasionally of bladder contents; irritability and disease of the surrounding parts from the abnormal secretions; neuralgic and neurosal conditions from changes in nerve structures; melancholia (neurasthenia); relaxation of the displaceable segment of the pelvic floor and consequent prolapse or hernia of the pubic segment. The result may be severe congestions from a disturbance of the fascia which holds the blood-vessels in relation. If the blood-vessels become distorted in their bed, disturbed circulation results.

In discussing the operation for coloperineorrhaphy by Dr. Thomas Addis Emmet and Mr. Lawson Tait I shall consider these both founded on anatomic principles, both practical and successful operations, and both arriving at the same end by different methods. However, since I can accomplish by a flap method exactly what Dr. Emmet accomplishes by denudation I have preferred to follow the flap procedure. I have employed the flap method for over six years, comprising over one hundred operations performed for almost all kinds of perineal laceration and uterine prolapse. In one case the uterus was completely prolapsed for fourteen years. Another case with laceration extending up the rectum the length of the index finger of thirty-four years' standing was operated successfully after three previous denuding operations. A third case was lacerated up the rectum for four inches, of twenty-eight years' standing, and had passed through three unsuccessful operations. One of twenty-seven years' standing, with three-inch rectal laceration, and one very different case of seven years' standing, with several unsuccessful operations by well-known gynecologists were operated on with perfect success. In these cases of long standing, atrophy was so far advanced from limited blood-supply and non-use that it required extensive flaps in order to secure tissue for a perineal body. To show that the perineal body is not significant in uterine support several of those patients continued for over twenty-seven years with laceration several inches up the rectum, with scarcely a symptom of uterine prolapse.

It will be observed from even a superficial experience that the patient should be properly prepared for colpoperineorrhaphy. If the patient have a long, pointed cervix, which acts like a conic wedge being driven downward at every breath or increase of intra-abdominal pressure, it will constantly dilate the vaginal sphincter apparatus and should be amputated. The amputation may produce involution of the uterus. A long, pointed, conical cervix generally has behind it a retroverted uterus which precedes prolapse.

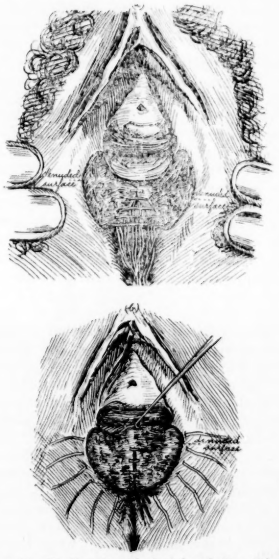


Fig. 22 *a* and *b*.—Dr. Skene's method of denudation and suturing the rectum.

Again, if there is a cystocele the patient should be prepared by an anterior colporrhaphy. It may be amputation of the cervix and anterior colporrhaphy can be done at the same sitting and anesthesia as the flap-splitting colpoperineorrhaphy. We frequently perform colporrhaphy and colpoperineorrhaphy at the same time. To require cervical amputation is rather rare, but if there be a retroverted uterus with pointed cervix it should be amputated and turned backward against the sacrum. In short we must imitate nature as much as possible to secure success. All hernia is the same; it is due to the destruction of normal valves and the straightening out of oblique canals. Hence in sacropubic hernia the normal obliquity of the vaginal canal must be restored. Colpoperineorrhaphy restores the posterior vaginal wall and anterior colporrhaphy restores the anterior vaginal wall. This is not often needed if the colpoperineorraphy be thoroughly performed. Prolapse is prevented by perineorrhaphy, elytrorrhaphy, episiorrhaphy (or some abdominal operation). Prolapse may be considered as a downward displacement of the pubic segment of the pelvic floor; the sacral segment of the pelvic floor shares in it by a yielding of some of its parts. There are so many varied opinions as to the etiology of prolapse that one can safely say the subject is not fully settled. In my opinion much credit is due to Drs. Hart and Barbour for their excellent investigations

on the structural anatomy of the pelvic floor. After considerable careful dissection I feel quite sure that many previous views must be changed, but it is hopeful when the closest and most continued students of the pelvic floor come nearly to the same conclusion. The subject of prolapse, I think, should be studied out anatomically and clinically. The field of investigation is still large. As time goes on the uterus itself will get less attention and the pelvic floor more. The subject of relaxation and submucous laceration will be more studied. Relaxation of the whole pelvic floor, due to repeated labors, infectious processes and anatomic lesions will be found to be a large factor in prolapse. Insufficiency of perineal support should not be lost sight of, and the sphincter apparatus of the pelvic floor will be more studied. From dissection one would at once conclude that the levator ani fascia and the triangular ligament were the main supports in the pelvic floor, and the relations of other supports must be considered. Dissection is the only intelligible way to understand the subject. For example, dissection of quite a number of bodies has thoroughly explained, in my mind, the conflicting views of anatomists and gynecologists as to the position of the uterus. As a gynecologist I have examined several thousand women, and I am sure that the uterus leans forward in the normal condition. Repeated examination on the back and while standing will prove that slight anteversion is the normal position of the uterus. Now, the anatomist has often insisted that normally the position of the uterus is in the hollow of the sacrum. I have repeatedly found in the dead subject that the uterus is in the hollow of the sacrum, precisely as the anatomist has described. Both gynecologist and anatomist are correct. In the living woman the normal position of the uterus is that of anteversion. In the dead woman in dorsal decubitis the uterus generally lies in the hollow of the sacrum. In just such a manner arise the differences of opinion relative to prolapse, which can only be cleared up by careful personal anatomic and clinical investigation. A comparison of different causes will soon let in the light.

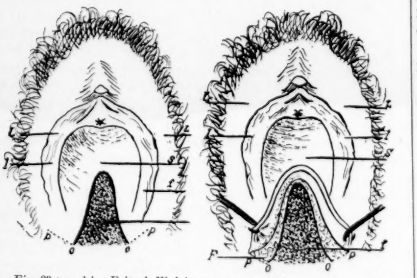


Fig. 23 *a* and *b*.—Fritsch-Walzberg method. The figure is according to Pozzi. The laceration extends into the rectum. S, rectovaginal septum; F, rectovaginal septum lacerated; P, perineum. In *b* the rectovaginal is split.

Though the peritoneal supports of the uterus be deficient they can be put at rest and finally cured by carefully planned operations on the vaginal sphincter apparatus. All primary uterus supports are attached to the neck of the uterus and before the uterus shows such signs of hernia the supports attached to the neck must be definitely elongated. Doubtless the uterine supports are frequently elongated by infective processes and hence a rest by repairing and fortifying the sphincter vaginal apparatus will result in restoration. Especially is this true in certain forms of retroversion. If the uterus remains in its normal position (i. e., perfectly movable) no retroversion and consequent prolapse will arise. In chronic infection processes the pelvic organs at times swell, soften, become edematous, ending in a form of hypertrophy from static congestion. I have frequently observed this slow repeated process in the clinics.

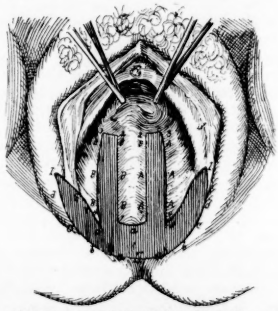


Fig. 24.—(After Hegar and Kaltenbach.) Bischoff's method of colpoperineorrhaphy. He denudes high up on each side of the posterior median vaginal column, B, B, A, A. This method partially foreshadowed Emmet's operation. Note the butterfly wings, 1, 2, 3, d, d. Bischoff saved the posterior vaginal.

ETIOLOGY OF PROLAPSE.

1. Insufficiency of sphincter apparatus: *a*, levator ani muscle; *b*, triangular ligament (anterior posterior layers and fascia of Colles); *c*, levator ani fascia, superior and inferior; *d*, perineum (composed of levator ani, bulbo-cavernosus, transversus perinei and sphincter ani ischeo-perineal ligaments); *e*, vaginal walls; *f*, urethro-vaginal septum; *g*, recto-vaginal septum; *h*, muscular and elastic tissue on lower third of vagina.

2. Insufficiency of peritoneal supports: *a*, utero-sacral ligaments; *b*, round ligaments; *c*, broad ligaments; *d*, vesico-uterine ligaments; *e*, perineum; *f*, elongated cervix.

3. Intra-abdominal pressure in increased or applied in abnormal directions.

4. Relaxation of anterior segment of pelvic floor: *a*, repeated labor; *b*, submucous, concealed facial lacerations; *c*, subinvolution of pelvic floor and organs.

5. Weight of uterus, which affords surface for intra-abdominal pressure.

OPERATIONS FOR PROLAPSE.

1. Tait's flap operation (and extension) of perineum.
2. Perineo-episiorrhaphy.
3. Elytro-perineorrhaphy.
4. Elytrorrhaphy.
5. Amputation of cervix.
6. Shortening of round ligaments (Alexander-Adams).
7. Shortening of broad ligaments.
8. Fixation of the uterus to the abdominal wall (hysteropexy).
9. Schucking's operation.
10. Herrick's operation.
11. Mackenroat's operation.

The operations for prolapse have been as varied as the views of its cases. Operators have attacked the

uterus, vagina, vulva and uterine ligaments to accomplish their purpose. The pioneer idea in prolapse was to close up the vulva so that the uterus could not escape. Thus we have the early episiorrhaphy of Fricke and Kuchler. But surgeons soon saw that simply closing up the vulva was like attempting to board up Mount Vesuvius. The forces at work were not at the vulva but deep in the interior. Then came the operations on the perineum with all their variety, from Guillenneau's successful case through Dieffenbach, Langenbeck, Simon and Sims, to the modern flap operation. Finally to episiorrhaphy and perineorrhaphy were added operations on the wall of the

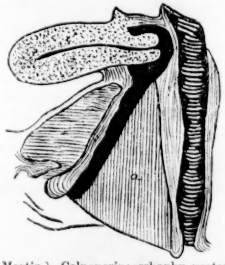


Fig. 25.—(A. Martin.) Colpoperineorrhaphy posterior according to Hegar: a, is the newly-built perineum.

vagina (colporrhaphy and elytrorrhaphy). Elytrorrhaphy has been quite a successful addition to gynecology, but it is a denudation operation and hence destroys valuable tissue. I have observed that the European operators attempt to save anterior and posterior columns of the vagina. Men see in the column a valuable piece of supporting tissue, and some of them, like Martin, try to save it. Dr. Emmet has

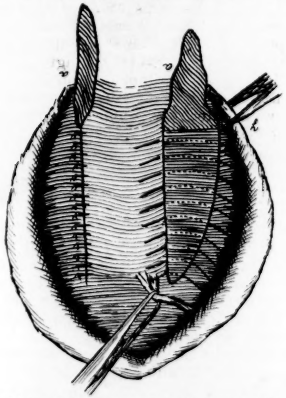


Fig. 26.—Copoperineorrhaphy after A. Martin. He styles it elytrorrhaphia duplex lateralis. The first step is to resect denude the two vaginal flaps; the left side is freshened and sutured; the right side freshened with the sutured, but not tied. *a*, *a*, the denuded vaginal flaps.

worked along the same line, and his operation is one of the most useful of its kind, and if mastered and done thoroughly is successful. In it he has combined the best principles of the denudation method. It saves the columns and denudes the areas of least resistance. His idea of supporting the pelvic floor is certainly correct. If the flap-splitting method could be made use of in this operation it would be a marked step in advance. The vulvar and vaginal operation of denudation should be superseded by the flap-extension method, which might be called perineo-episiorrhaphy. It is done with no loss of tissue and can be carried right up to the urethra. The amount of flap and consequent barrier of tissue built up at the vulva will depend on the depth of the scissors' clip and the amount of exposed tissue, and also much on the manner of suturing the surfaces to be coapted. The flap-extension method will form one of the best supports for prolapse. The objections against the Alexander-Adams operation are: 1. Unsatisfactory reports and the bias in selecting cases for the operation. 2. In quite a number of bodies the round ligaments can not be found. In many cases which I investigated no muscular ligaments could be discovered until one got inside the internal abdominal ring. 3. No operator can tell in which cases the difficulty will occur. 4. The danger of opening the peritoneum. 5. The round ligaments are insufficient for a main uterine

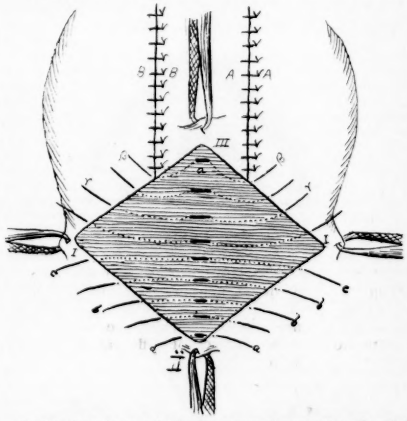


Fig. 27.—Second step in A. Martin's colpoperineorrhaphy. He calls it perineauxesis; *a* and *b* show the lines of the vaginal denudations sutured (elytrorrhaphy). The diamond-shaped space, 1, 2, 3, is the perineorrhaphy following the colporrhaphy posterior. The letters indicate the sutures.

support. 6. Hernia may follow the operation. 7. In case of uterine adhesions the ligaments will not raise and support the uterus. Results will not be permanent. The round ligaments will gradually yield to uterine weight, especially if there be an enlarged uterus, as is often the case in prolapse.

Some of the above objections may be modified. The Alexander-Adams operation is an excellent one in selected cases; in retroversion without adhesions it will frequently be of great utility. But it is here mentioned as an accessory operation to colpoperineorrhaphy. Shortening the broad ligaments is of questionable value. Hysteropexy, or the fixation of a movable organ, is against all physiologic principles.

Schucking's operation for prolapse is not yet established, and it seems the bladder would be in great danger of being wounded during the operation. Herrick's operation of attaching the cervix to the posterior vaginal wall has made little definite progress. we have not yet learned how to utilize the sacro-

uterine ligaments in prolapse. Such operations are but accessions to colpoperineorrhaphy. The advantages of the flap operation are:

1. The ease and simplicity of its performance.

2. It wastes no tissue; if it fails the patient is no worse off than before the operation, whereas the failure of a denudation operation leaves serious defects.

3. It is the only operation that restores in a natural method the perineal body. The linear cicatrix is split and sutured in the opposite direction. Dr. Emmet's operation unites the perineal wound artificially by uniting tissues not previously involved.

4. It withstands subsequent labors; several of our operations have withstood perfectly subsequent labors. Mr. Tait informed me of the same fact in many of his operations.

5. The sutures are not passed through skin or mucous membrane, and therefore are not so liable to suppurate or produce pain.

6. The certainty of healing.

7. The flap operation secures in the easiest and most convenient manner the widest possible surface for coaptation and healing of the fasciæ and adjacent tissues in the median line for support.

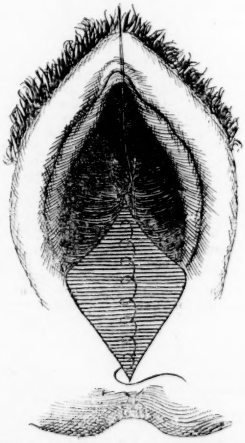


Fig. 28.—Martin's operation with a continuous catgut suture (etagenaht). It is a continuous buried suture.

8. The pain after the operation, in my experience, is less than after the denudation operation.

9. Tait's flap operation can be practiced successfully where the repeated denudation operation can not be performed because of loss of tissue and excess of tension.

10. The short time required to do Tait's flap operation minimizes shock.

11. The resulting cicatrix is in its natural location and linear, and will thus cause less peripheral nervous disturbances.

12. The stitches leave no cicatrices and therefore will cause no irritation. One can observe the most practical and best observers trying to save the column and trying to perform denudations in the vaginal sulci. The superiority of Tait's flap operation is that it saves all tissue and builds a natural perineum in a natural location, and thus subserves natural forces according to nature's original law, and anatomic structures are not much violated by cicatrices and cicatricial contraction.

A fact not generally appreciated is the neurosis, the neurasthenic condition produced by perineal lacerations. The visible wound is not always commensurate with the suffering. There may be a visible wound, an infection atrium, or simply an over-stretching of muscle and fascia, which stretches and traumatizes the peripheral nerves, producing nervous irritation. The fascial planes which hold the blood-vessels in distinct relation, are so damaged that congestion and decongestion of the pelvis frequently arise. Healthy veins should be spiral and uniform in caliber. The laceration of the pelvic fascia allows the veins to straighten out and become irregularly dilated. This straightening out and dilatation produces not only blood and lymph congestion, but peripheral nerve pressure. The frequent pelvic congestions and decongestion from deficient blood-vessel's support, produce conditions which favor the development of pathogenic microbes in the genital mucosa. The gynecologist sees many patients with neurotic phenomena which can only be attributed to perineal lacerations and defects.

Fig. 29.—Martin's operation with buried catgut. The upper part (elytrorrhaphy) posterior colporrhaphy; the lower part (perineauxesis) perineorrhaphy; *b*, the upper end of thread; *c*, lower end of the catgut.

When the sutures are tied the newly formed perineum will look enormously longer, but it will soon shrink to the natural condition. After some experience one can do the flap operation so that on healing the linear cicatrix will resemble the old raphe so closely that one can scarcely tell after six months that an operation has been performed.

For cystocele the flap operation can also be performed. The flap method is alike applicable to partial and complete perineal laceration. The operation is best demonstrated on complete lacerations.

(To be continued.)

Formalin for Insect Bites.—As the subject of insect stings is mentioned in a recent annotation, may we point out that "formalin" (recommended some time ago for mosquito bites in one of the medical journals by a Zanzibar correspondent) is an excellent remedy for the irritation produced by the stings of all insects? The "bite" is touched with the moistened stopper of the "formalin" bottle, and as soon as it begins to smart the excess is wiped off; relief is almost instantaneous.

SOCIETY PROCEEDINGS.

American Association of Obstetricians and Gynecologists.

Eleventh Annual Meeting held in Pittsburg, Pa., Sept. 20, 21 and 22, 1898.

First Day—Morning Session.

The association met in the assembly hall of the Monongahela House and was called to order by the president, Dr. Charles A. L. Reed of Cincinnati, Ohio, at 10 A. M.

Dr. John Milton Duff of Pittsburg welcomed the association on behalf of the local medical profession. Lieutenant-Governor Walter Lyon followed with a brief but very eloquent address of welcome on behalf of the citizens of Pittsburg and of the State. President Reed, in behalf of the association, responded to these remarks of welcome in a very concise but graceful speech.

Following the preliminary exercises came the first paper of the scientific session, by Dr. Frederick Blume of Allegheny, Pa., entitled

SOME OF THE COMPLICATIONS FOLLOWING VAGINAL HYSTERO-SALPINGO OOPHORECTOMY IN PELVIC SUPPURATION; WITH REMARKS ON THE OBJECTIONS TO THIS OPERATION.

He said a perusal of the literature of the past few years proved that vaginal hysterectomy had made its way here and abroad. Its condemnation upon therapeutic grounds had decidedly diminished. Its advantages were too plain to permit of being longer ignored. Men who, in the beginning, strongly objected or opposed this mutilating operation, as some were fond of styling it, had changed their opinions. Guided by the experience of others, they had adopted this method and confirmed the assertions of its advocates that it was a conservative operation in the broadest sense of the word—a procedure which, though sacrificing the uterus, conserved the life of the patient even under circumstances where the suprapubic route would mean certain death. The propriety of removing the uterus in suppurative disease of the appendages had been questioned ever since Péan introduced vaginal hysterectomy. Briefly stated, the chief objections were: 1, the uterus was not a useless organ after the ablation of the appendages, and should not be sacrificed unless seriously diseased; 2, vaginal hysterectomy was an incomplete procedure, followed by serious complication and was not curative. The disposition to preserve the uterus during the child-bearing age in women with healthy tubes and ovaries, or in unilateral suppurative pelvic disease, could well be understood, but why this organ should not be removed as the initial step of a life saving operation, when the ablation of both appendages became a necessity, was beyond comprehension. The assertion that the uterus without the appendages was still an important organ, that its functions had not ceased with the artificial induction of the menopause, must be rejected as untenable in the light of present knowledge. The arguments that after the extirpation of the uterus the nervous phenomena were more pronounced than when the appendages were left alone, had strongly influenced many surgeons against vaginal hysterectomy. Careful investigation, however, had shown that these arguments could not be verified. Mainzer, in a report of 200 vaginal hysterectomies for chronic inflammation of the adnexæ, performed in Landau's clinic, had arrived at the conclusion that there is less disturbance of the nervous system after the radical operation than after salpingo-oöphorectomy alone. He further states that the age of the patient bore no relation to the presence or absence of these nervous symptoms. Dr. Blume does not confirm the view that the removal of the uterus increases the nervous disturbances incidental to the menopause, and he is inclined to believe that this view is based upon the complaints of neurotic women. As to the sexual passion, his patients, with but one exception, state that they have as much sexual appetite now as at any time before operation. Two of them, young widows, who married a year after the operation, informed him repeatedly that they were more passionate and enjoyed sexual intercourse more than ever. The mortality of vaginal hysterectomy was considerably less than that of the abdominal operation. There was, however, a diversity of opinion as to the ultimate results of the vaginal procedure. The essayist does not resort to the vaginal method in those cases in which there is a possibility of saving one tube and ovary, i. e., in cases of unilateral suppuration even when due to gonorrhea. He is not yet convinced that both appendages must be sacrificed, for less the uterus, when gonorrheal infection is limited to one tube and ovary. His personal experience with vaginal hysterectomy for pelvic suppuration is limited to forty-two cases operated during the years 1895 to September, 1898. This series, though small in number, was quite interesting on account of the extent and the gravity of the pathologic changes. Of the forty-two patients, eighteen belonged to that desperate class which, if treated by the abdominal route, were either left unfinished or, according to the statements of prominent operators, had a death rate of 25 to 30 per cent. in the hands of the most skillful surgeons. The pelvic organs were agglutinated into one mass and could not be distinguished by vaginal or rectal examination. In some instances these masses reached half way to the umbilicus, while in others the peritoneal cavity was less involved and they extended downward into the vagina, pushing the uterus against the symphysis pubis and compressing the rectum to such an extent that an ordinary rectal tube could not be passed without difficulty. The lesions of the remaining twenty-four patients were not quite so extensive, yet in every instance both appendages were so far involved that a conservative operation was out of question. Complications occurred in three cases.

Dr. Joseph Price of Philadelphia said that the sexual appetite of women, alluded to by the essayist, following a variety of operative procedures, was in many instances improved rather than impaired. It was rare for a woman to complain of impaired sexual appetite after a supravaginal hysterectomy. Age, however, should be considered in discussing the nervous phenomena incident to a normal or precipitate menopause. He advocates the abdominal route, saying that the vaginal method was an incomplete one. The latter method favored bowel obstruction. Of ten vaginal hysterectomies performed by Coe in his early work, there were two deaths from intestinal obstruction.

Dr. Edwin Ricketts of Cincinnati, cited an instructive case in which it became necessary to resort to the combined method. He spoke in favor of the vaginal route in some cases, but not in all instances, for pus in the pelvis.

Dr. Rufus B. Hall of Cincinnati was willing to admit that there were cases that could be dealt with by vaginal section and drainage, but the field for this operation was limited. In cases in which there were dense adhesions to viscera, good, complete work could not be effected by the vagina. Experience had taught him that if a patient was under 35 years of age and the uterus was removed by an abdominal operation and the cervix was left, she suffered less from reflex disturbances than she did when the uterus was left.

Dr. Charles Greene Cumston of Boston said that suppurative conditions within the pelvis demanded different treatment, according to their situation, the number of foci, their size and nature, and in making the diagnosis and considering the choice of operation, all of these things should be considered, whether the case be suitable for the vaginal or abdominal route. In most cases of pus in the pelvis, speaking in a broad sense, posterior colpotomy was a trifling operation, yet a conservative one. It could be performed in chronic, purulent cases of the female pelvic organs and in acute suppurations where it would be dangerous to do either abdominal or vaginal hysterectomy.

Dr. James F. W. Ross of Toronto said that at the Montreal meeting of the British Medical Association vaginal hysterectomy for cancer was discussed, and his experience agrees with that of Price, that this operation for carcinoma, no matter how early it was done, was not satisfactory. High amputation of the cervix after the method of Byrne had been satisfactory in his hands.

Dr. L. H. Dunning of Indianapolis remarked that the character of the suppurative products encountered by the surgeon called for different lines of procedure. In the cases described by the essayist, in which the pus accumulations were exceedingly large, extending as high as the umbilicus, fixed, and extending down into the vagina, it had been his practice for the last ten years—and he saw no reason to change it—to do vaginal section. In such instances where vaginal hysterectomy was done it was exceedingly difficult, if not impossible, to remove the pus sac. He had operated on fifty cases of the kind described, by vaginal incision. Of this number four returned for subsequent operation. All but one had made primary recoveries.

Dr. B. Sherwood-Dunn of Boston believes the perfection of technique of hysterectomy by the vaginal route exceeds in difficulty that by the abdomen to a great degree. The complications following the vaginal route exceeded those of the abdominal method. The danger to the ureters, the bowel, and post-operative hemorrhage were very much greater by the vaginal than they were by the abdominal route. He restricted vaginal hysterectomy to a few selected cases where he was fearful of death of his patients by the suprapubic route. The vaginal operation was difficult, and in many instances it had to be fol-

lowed by a second operative procedure through the abdominal wall.

Dr. W. E. B. DAVIS of Birmingham holds that vaginal incision and drainage has a large field. There was a great deal of difference between operating upon old gonorrheal cases and upon fresh ones. Unquestionably all the cases following the puerperal state, where the surgeon can place his finger upon the side or behind the uterus, could be dealt with better by the vaginal route. The surgeon made a mistake when he opened the abdomen to deal with this class of cases, when vaginal incision and drainage was such a simple procedure. While a few cases would return for secondary operations, the surgeon should be willing to give young women several operations, if necessary, to save important organs.

Dr. C. A. L. REED of Cincinnati formerly resorted to the vaginal route and, after trying it carefully and conscientiously in many cases, he had practically abandoned it and had returned to the abdominal incision. He had found, however, a class of cases in which hysterectomy was a very important concomitant in the course of treatment, but even in these he does not remove the uterus per vaginam.

The paper was further discussed by Drs. A. B. Miller of Syracuse, and J. Henry Carstens of Detroit.

FIRST DAY—AFTERNOON SESSION.

Dr. D. TOD GILLIAM of Columbus, Ohio, contributed a paper entitled

OPERATIVE TECHNIQUE FOR INTRALIGAMENTOUS OVARIAN CYSTOMA.

Prior to the enucleation method of Miner, the surgical treatment of these cases was crude and incomplete. Miner's method marked a new epoch and will ever remain the foundation principle of their surgical treatment. It was, however, attended with so much difficulty and danger as to greatly abridge its usefulness. The chief danger was from hemorrhage, which was oftentimes fearful and not infrequently fatal. Other, and by no means unimportant, dangers came from injuries to important pelvic structures while conducting a hurried and blind dissection. There was a crying need for something better. The essential factors of the ideal operation are: 1, tapping, to reduce the volume of the cyst and to open the way for hemostasis; 2, ligating the supply vessels to control hemorrhage; 3, enucleation along the line of cleavage to insure easy, rapid and safe dissection. This technique was foreshadowed in a case on which the essayist operated, on Oct. 30, 1894. Here he gained his first knowledge of the line of cleavage for intraligamentous cyst and reported it to the Columbus Academy of Medicine. In 1896 Kelly announced the line of cleavage for intraligamentous uterine fibroid. Hall (in 1897) was the first to combine all the essential factors of the ideal operation. Hall's method, however, included hysterectomy. The method of the essayist, without hysterectomy, is as follows; First tap the cyst and drain off its contents; then ligate the ovarian artery near the pelvic wall and place a clamp between the cyst wall and the uterus. Select a point as low down on the anterior wall as practicable, and with a pair of forceps lift up the capsule and make a small opening. Insinuate a finger and sweep it around, separating the cyst from its matrix at the base. Now turn the finger upward and work in the direction of least resistance, slitting the capsule as you go. This will indicate the line of cleavage and will generally run upward and outward diagonally across the face of the tumor. Now introduce the hand and strip off the capsule from below upward, following the line of cleavage. Enlarge the opening by making an incision parallel to the capsular margin; seize the cyst and roll it out of its bed, stripping it from the posterior capsular wall. Trim and suture as in other cases.

GENERAL CONSIDERATIONS ON SEPTIC INFECTION OF OVARIAN CYSTS.

DR. CHARLES GREENE CUMSTON of Boston read this paper. He said that inoculation experiments had shown that if the liquid contents of an ovarian cyst were uncontaminated by bacteria they would remain aseptic and would undergo no change. But if, on the contrary, microbes attacked a cyst and entered it, its contents would serve as excellent culture media, and symptoms of infection would soon appear. But the human organism would take on the offensive and would react against the bacteria which had infected the cyst; leucocytes came from the walls of the vessels and attacked the invading microbes, and thus we had the transformation into pus of the liquid contents. There were two kinds of septic infection of ovarian cysts, namely, pathogenic infection and saprophytic infection. Pathogenic and saprophytic organisms often entered ovarian cysts through puncture, incision and drainage. As puncture was discarded in a great number of instances by the majority of the profession, the patient contained the agent of the septic process under consideration. The germs did not come from without, but from the interior of the organism, and it may be called a true auto-infection, which takes place in one of three ways: 1, by means of the blood, in which case the infection was either direct, produced by phlebitis, which extended to the cyst, or it might be indirect, in which case the infective elements were carried in the general circulation into the tumor by means of its pedicle; 2, infection might take place by the lymphatics, in which case the lymphatic channels acted as the contaminating canals and allowed a direct introduction of the germs into the interior of the cyst up its hilum; 3, we had infection through adhesions, which were plentifully supplied in new-formed vessels which were intimately connected with those in the walls of the cysts, and thus allowed an easy transportation of the bacteria.

After giving at considerable length the symptoms of ovarian cysts and dwelling upon the diagnosis and differential diagnosis, the author dealt with their operative treatment. Operation for the removal of ovarian cysts which were the seat of septic infection may be divided into four stages: 1, incision of the abdomen; 2, the breaking up of the adhesions and ligature of blood-vessels which they may contain, and then the pus may be removed by trocar and not with the knife, because if the cyst is incised pus will immediately flow out, and the wound will very likely become infected by the septic material; 3, extraction of the cyst through the wound—and in doing this the surgeon should be careful to avoid infecting the abdominal incision at the time he is drawing the pocket through, but this complication may be easily avoided if aseptic gauze sponges are tightly packed around and inside the line of incision. Next comes the ligature of the pedicle and its section, after which it is dropped into the abdomen; 4, the fourth step of the operation consists in the cleansing of the peritoneum, which should be done with great care, especially when the operative field has run any chance of infection. If this has occurred, free irrigation of the peritoneum is proper, but it should be done with care, and the liquid employed should be a warm, normal salt solution. Care should be taken to limit the irrigation to the subumbilical portion of the peritoneal cavity, and a back flow of the liquid toward the diaphragm should be prevented by having the operating table perfectly flat and the thorax slightly raised.

Dr. HENRY HOWITT of Guelph, Ont., read a paper entitled

A SECOND CONTRIBUTION TO THE SURGICAL TREATMENT OF INTUSSUSCEPTION IN INFANTS, WITH CASES.

In the paper the term "infant" was restricted to those under 1 year of age. After briefly describing the different varieties of intussusception that occur at any period of life and also referring to particulars in regard to statistics, modes of growth, length of bowel involved and the severity of attack in the varieties, he states that in the infant we have only the acute forms with which to deal in practice, nay, possibly only the ileocolic, which all authorities agree to be the most acute and rapid variety of invagination. It is, he states, the ileocecal form plus the valve distended and its lumen occluded by the swollen and edematous invaginated portion of ileum which, owing to the tight constriction at neck by valve, in a manner resembles a well-hammered boiler rivet that no evenly distributed pressure from within can force out. The author believes that many instances of the trouble occur in infants, leading invariably to death, without the true nature of the malady being recognized by the attendant; and that when the facts having reference to this variety of intussusception become generally known, fewer deaths will be recorded from certain bowel affections, and more lives be saved by surgical means. He has seen seven cases, six of them almost within the past five years, or since his attention was drawn to the subject. Six were in male children; all came from a district, the population of which is under 12,000. He has operated successfully on four, all of whom were under six months of age. A fellow practitioner lost one owing to an accident, during operation. In one case the friends refused operation and death resulted, and one died shortly after the onset, before anything could be done. The symptoms of ileocolic intussusception were fully dwelt upon. In regard to its diagnosis, the speaker emphasized the importance of the history of the onset, and stated that without it the attendant may be likened to a ship in a storm without helm or compass. In fact, the nature of the onset might suffice to make a diagnosis. The detection of a tumor in the course of the colon left no room for doubt. The condition in this form of intussusception was such as to preclude the hope of recovery by any method short of operative. No time should be lost in trying either bowel inflation or injection of fluids. They could do no good. His method of operating is as follows:

He maintains the temperature of the child by suitable applications to extremities and body during operation. Rigid aseptic preparations and precautions should be carried out. A median, three-inch incision, avoiding the high-placed bladder, is made; the small intestines are eventrated as rapidly as possible, and protected with gauze, which is irrigated with water of suitable temperature. The evisceration allows the obstructed portion of intestine to be brought into view. When, as is generally the case, the invagination has reached the transverse colon, the surgeon can not bring it out of the wound till the part of the large bowel implicated is disinvaginated. This is accomplished by making pressure on the apex of the intussusceptum while the intussuscipiens is pulled in the opposite direction. It is done by grasping the colon close to the apex with hand and following it up the bowel step by step till the colon and cæcum are free. The mass is now lifted out of the incision. Then comes the most difficult point, the reduction of the invaginated portion of ileum. The part is grasped in the hand and firmly pressed for a few minutes; the pressure is made with the thumbs on the apex, while the fingers surround and support the outer orifices of ileocecal valve. The method resembles that used in paraphimosis, only the large bowel covers the part from view. Before returning the intestines to the abdominal cavity the contents which have accumulated in the ileum above are forced through the affected part into the colon; this proves that the difficulty has been effectually overcome and ensures an early movement of the bowel. Drainage is not necessary. The omentum is spread over the intestines to prevent adhesion of the bowel to the line of incision. The dressing is covered with oiled silk, the edges of which are sealed with collodion to prevent urine reaching cut.

Dr. REED said his experience was restricted to a single case of intussusception in infants. The child was operated *in extremis* and died within the first five hours following operation. With early interference the outcome might have been different.

Dr. PRICE said the cases reported were a beautiful demonstration of what can be accomplished by good judgment, great diagnostic skill and early surgical interference.

Dr. W. E. B. DAVIS thought it was unusual for one man to have as many cases of invagination in infants. He had only met with one case, and this occurred ten days ago, the child, a male, being 8 months old.

Dr. HALL recalled half a dozen cases of intestinal obstruction in infants' in sixteen years' general practice, that had died. He believes the invagination is overlooked in the majority of instances.

Dr. JOHN M. DUFF believes intussusception in infants occurs more frequently than is generally supposed. He had held post-mortems on several cases where the diagnosis was doubtful, but intestinal obstrucfion was found. He had seen two cases within the past year; in one, operation was refused and the child died. At the autopsy intussusception was found. The other case was operated on after peritonitis had set in, followed by death.

Dr. CUMSTON had seen four cases of invagination in children.

First Day—Evening Session.

Dr. JOSEPH PRICE of Philadelphia read a paper with the caption:

NURSING IN ABDOMINAL SURGERY.

He thought the time had passed when any question was raised by intelligent and experienced members of the profession as to the value of the trained nurse. Nurse training schools had become important institutions, not only to young women who, with a creditable ambition, entered them to fit themselves for the profession of nurse, but to the physician, for the physician, whether in general or special practice, knew the value of the trained nurse, understood the close and vital relation she held to his patient; how much her care and quick intelligence of the needs did to relieve his anxiety and promote the welfare of his patients. The training of these schools should be specially and simply directed to fit pupils for the duties of nurses. These duties in all their details, and all the steps in the training essential to discharge them faithfully and intelligently, should be definitely, orderly and clearly outlined by teachers of thorough experience. Those desiring to become nurses should commence their work early, while young, studious and ambitious; while their habits are not so fixed as to make a change difficult, if not impossible. Too much had alway been expected of nurses in private nursing. Nursing through twenty-four consecutive hours was too much to require of human endurance and resulted in neglect of the patient. Systematically trained special nurses were usually bright, cheerful, interested and spirited; were alive to the importance of their work; cared for and infused into their patient some of their own animation. The untrained nurse, on the other hand, was meddlesome and dangerous. Young, healthy, unmarried women were to be preferred, not widows or grass widows, great-aunts or grandmothers.

Second Day—Morning Session.

Dr. W. J. ASDALE of Pittsburg read a paper in which he reported an interesting case of extrauterine pregnancy, with mature fetus, and exhibited specimen. The skeletal remains were borne seventeen years over the completion of gestation term, and the condition was eventually complicated by an ovarian cyst. No operation was performed. Patient died. At the autopsy a monocyst of the right ovary of large size was emptied and withdrawn. One of the long bones of a fetal skeleton was found in the pelvis, free; from high in the left hypochondrium underlying the left lower ribs and just beneath the diaphragm the remains were found, skeletal, of a fetal body, disarticulated and closely packed together. The bones were invested by the intestines, a portion of which was cut away in the removal. The fetal soft parts had, at the time of the autopsy, almost entirely disappeared. Records of successful operations undertaken for the removal of long-retained fetal remains were so rare as yet to be exceptional, and how much more doubtful surely would be the result of operative interference in such a complicated case as this.

REMARKS ON PRIMITIVE AMENORRHEA, WITH REPORT OF A CASE AND PRESENTATION OF ACCOMPANYING PATHOLOGIC SPECIMEN.

Dr. WALTER B. CHASE of Brooklyn read a paper on this subject, in which he said that the essential fact in the sexual life of woman was the predominating control of ovarian influence, and the central fact in the pathology of woman's sexual life was due in large degree to changes or perversion of function or structure of the ovary. While ovarian function was not the single influence which swayed woman's existence, the absence of it would dethrone her womanhood. The commonly accepted theory concerning the functional activity of woman's sexual life was that menstruation marked the commencement of ovulation, and that in its ordinary manifestations they were, in point of time, coincident. The experience of all observers doubtless furnished exceptions to the common law, but these exceptions served rather to confirm than abrogate it. Among these variations or absences of physiologic processes, amenorrhea in some of its forms was of common frequency. An intelligent and comprehensive distinction in amenorrhea embraced a difference between those cases which were congenital or acquired. In the former—*emansio mensium* or primitive amenorrhea—the causes were congenital, while in the latter—*suppressio mensium* or acquired amenorrhea—the causes were functional, or largely so. In the first class, menstruation has never been present; in the second class, the function once present is arrested. Primitive amenorrhea may result from congenital defciency or imperfect development, as follows: absence or imperfect development of ovaries and uterus; degeneration of the ovaries, cystic or otherwise; the formation and development of benign or malignant tumors of the ovaries sufficient to preclude or abolish their function.

Report of Case.—Mrs. B., aged 24 years, a woman of refinement and fine physical development, had been married about two years, was sterile and had never menstruated. She gave an intelligent history of having had all of the symptoms which usually accompanied menstruation, since the age of puberty, except the appearance of the menstrual flow, commencing at about 18 years. The symptoms of discomfort developed with perfect regularity every twenty-eight days, with a history of increasing pain and nervous excitability, until during the eighteen months previous to his having seen her the pain had become unbearable and nervous perturbation such that she and her friends feared insanity. The one subjective symptom which gave rise to her fears of mental disturbance was severe headache and pressure felt at the vertex, which was present for several days at each menstrual molimen. During a year or more she had become conscious of a gradual enlargement of the abdomen, and could herself easily define an abdominal tumor. She entered the service of Dr. Chase at the Bushwick Hospital, and a careful study was made of her case by the consulting gynecologist and himself. The patient was desirous of an operation, which was performed. The first tumor removed was a dermoid and had no pedicle, but was closely adherent to the uterus and the right broad ligament. The second tumor was a suppurating multilocular cyst of the left ovary. The report of the pathologist was: 1, that the dermoid had usurped the place and destroyed the function of the right ovary; 2, in one of the cyst walls of the multilocular ovarian cyst was found a shrunken ovary the size of a large lima bean, and within this ovarian stroma was found a corpus luteum spurium. To the

presence of this ovarian stroma was due the womanly development, with ovulation, and the futile effort of menstruation and its consequent suffering; 3, it demonstrates the possibility of ovulation without menstruation; 4, it leaves us in doubt whether the absence of the Fallopian tubes was primary or secondary to the grave disease of the ovaries, with the possibility that they were congenitally absent; 5, it presents the rare and exceptional condition of a perfectly developed woman who had an ovary and uterus, who ovulated, was sterile, and never menstruated, and yet was ruined in health by Nature's effort to establish an impossible normal function.

The remainder of the session was devoted to the presentation and discussion of pathologic specimens. Specimens were exhibited by Drs. John B. Deaver, X. O. Werder, Rufus B. Hall, and Wm. H. Humiston.

SECOND DAY—AFTERNOON SESSION.

The President's address was delivered by Dr. CHARLES A. L. REED of Cincinnati, on

THE EVOLUTION OF SPECIALISM.

He said that modern specialism in medicine dated from the period when the French schools, in the early decade of this century, took up seriously the question of pathologic anatomy. This was the physical basis upon which the work of division began. The obstetric art was as old as the function of reproduction, although the latter ages had witnessed its present refinements. It had been said that obstetrics married surgery, and that the fruit of the union was bright-eyed gynecology. The accouchement probably occurred at the time Recamier invented the speculum in 1801. While surgery had its first rational development in the United States in 1809, under the masterly hand of McDowell, everything from that day to this was essentially contemporaneous history, in which occurred conspicuously many of the proudest American names. Specialism became a verity, in response to natural laws, which even today determined its destiny. There was not a day but that the general medical profession became enriched in resource and potentiality by the accretions derived from specialism. Each specialty, however assiduously cultivated, remained an integral part of the great general profession, the masters of which must ever stand as our ideals. All specialists today were primarily the products of general medical culture.

THIRD DAY—MORNING SESSION.

Dr. D. TOD GILLIAM of Columbus, Ohio, read a paper on the "Treatment of Granular Erosions of the Cervix," and reported three cases, which he had treated successfully by ligation of the cervical vessels.

Dr. B. SHERWOOD-DUNN of Boston, followed with a contribution of

THE RELATION OF NERVOUS AFFECTIONS TO DISEASES OF THE FEMALE PELVIC ORGANS.

He limited his remarks to the great neuroses of neurasthenia and hysteria and insanity. He was totally opposed to any operative procedure, except where pathologic conditions were demonstrable. He had no confidence in operations upon healthy organs for the cure of any neurotic condition, and believed that such were now generally condemned by the profession. He, however, looks upon the position taken by some neurologists, that there was no relation of cause and effect between the various neuroses and psychoses and disease of the female pelvic organs, and being as extreme and condemnatory as the advocacy of the removal of normal organs in the female pelvis for the cure of nervous diseases, by some ill-advised persons calling themselves gynecologists. In operating upon diseased conditions in the pelvis, the gynecologist did not expect to remove the symptoms of the neuroses, but only those symptoms properly belonging to the pelvic disease itself. But strange and disappointing as it might seem to be to some of the critics, when those pathologic pelvic conditions were removed or corrected, the nervous system, relieved from the source of unceasing irritation, gradually returned to its normal poise, and the patient was cured of her neuroses as well as her pelvic disease.

Dr. WM. H. HUMISTON of Cleveland, Ohio, read a paper on the

GRAVER FORMS OF NERVOUS DISTURBANCES DUE TO ORGANIC CHANGES IN THE GENITAL ORGANS.

In the last five years of his work the essayist had never operated upon a case in which the correlation between the diseased pelvic organs and the nervous symptoms was not clearly defined before an opinion from a neurologist relieved him of doubt of a nerve or brain lesion, with one exception. He reported six cases in which great relief, in some cases cures, followed operative interference. The first case was one of insanity; the second, melancholia; the third, neurasthenia; the fourth, insanity; the fifth, hystero-epilepsy, and the sixth, hysteria. The cases were reported with the hope that some effort would be made to secure for women confined in county and State institutions for the insane such surgical measures which would, in a large proportion of cases, be a curative means for their mental ailment, and which must, in a vastly greater proportion at least, improve their condition both mentally and physically.

Dr. RUFUS B. HALL of Cincinnati read a paper on

ALBUMINURIA COMPLICATING GYNECOLOGIC OPERATIONS.

The Doctor referred, first, to the conditions predisposing to this complication. He urged careful examination of the urine preceding operation, so as to determine, if possible, the presence of nephritis or other causes leading to suppression. The most common cause is a preexisting nephritis, but unfortunately, in granular nephritis, a most careful examination of the urine may fail to show the presence of the disease. One of these patients, after the operation, may have suppression followed by coma and death. The Doctor said we might also have suppression following the operation in a patient with a fatty heart or with atheromatous arteries. He considers it of the greatest importance to have the patient thoroughly prepared for operation. If he finds the least indication of preexisting nephritis, he advises chloroform for the anesthetic, regardless of the age of the patient. In his early operative work he used ether almost exclusively. He cites 110 sections in which ether was given. In thirty-three cases there was a trace of albumin in the urine in the first twenty-four hours. In ten cases there was partial or complete suppression, and two died in coma. During the time he used the ether, he operated on seven patients known to have nephritis. They were given chloroform and are included in 500 sections where that drug was the anesthetic. Eighty-five of this number showed a trace of albumin in the urine in the first twenty-four hours after operation. Ten cases had suppression, and four died of uremic coma. All patients who were known to have kidney disease were given chloroform. There were 35, and the deaths in the chloroform list were from this number. To avoid the dangers from the use of chloroform, the Doctor urged that its administration be entrusted only to one expert in its use. The Doctor closed his paper with a resumé of the preliminary treatment he accords every patient about to be subjected to a section; of the manner in which he conducts his operations, and of the measures he employs if albuminuria occurs following the operation.

THIRD DAY—AFTERNOON SESSION.

Dr. X. O. WERDER of Pittsburg gave the clinical observations of over one hundred abdominal sections for ovarian tumors.

Dr. FREDERICK BLUME of Allegheny, Pa., reported a case of double uterus and vagina, with pregnancy in one horn, in which he excised the vaginal septum.

The election of officers for the ensuing year resulted as follows: President, Edward J. Hill, Newark, N. J.; First vice-president, Edwin Ricketts, Cincinnati, Ohio; Second vice-president, A. B. Miller, Syracuse, N. Y.; Secretary, Wm. Warren Potter, Buffalo, N. Y., re-elected; Treasurer, X. O. Werder, Pittsburgh, Pa., re elected. Executive Council, A. Vander Veer, L. S. McMurtry, W. E. B. Davis, John M. Duff, L. H. Dunning and Walter B. Chase. Indianapolis, Ind., was selected as the place for holding the next meeting, the time of which was left to the Executive Council.

Gloucester County (N. J.) Medical Society.

This society celebrated its eightieth anniversary at Wenonah, Sept. 15, 1898.

The President, Dr. Geo. C. Laws of Paulsboro introduced the mayor of the Borough of Wenonah, who welcomed the assembly in a fitting speech, and at the request of the President, Dr. Mordecai Price of Philadelphia responded.

Dr. JAMES TYSON of Philadelphia then read an essay on

THE GENERAL PRACTITIONER.

He said: "A general practitioner is one who shrinks from no service which belongs to his art. He is at once physician, obstetrician, gynecologist, ophthalmologist—anything which has received a title in the differentiation of professional duties. A hundred years ago, one man could do all that was expected of him. Even then certain men were distinguished for operative skill, yet the entire field was considered within the province of one man. Casting about for the field actually occupied by him we find he is one who practices, first of all, medicine in its broadest sense, including not only the diseases of children, but also skin diseases. He practices midwifery. In surgery, for the

most part, he is often called upon in minor surgery and the simpler affections of the eye and ear. The more complicated technique, which modern medicine has imposed upon the proper treatment of diseases of the nose and throat, demands vastly more time and trouble than the older treatment of these affections, yet the general practitioner can not escape it. Orthopedics is practically excluded, while genito-urinary affections necessarily fall within his province. The term must include more in the country than in the city. In the city he is limited in his work by the will of the patient. In the country, in the truest sense, the physician is a general practitioner. His qualifications should be correspondingly thorough. He should have preliminary culture in the broadest sense, much more than the specialist. He should be college-bred; able to read Latin, French and German. Greek also would further fit him for his work. He should be well drilled in physics, in chemistry, equally well in botany, mineralogy, comparative anatomy and zoology—a biologist in the full sense of the term; well-read in standard literature; equipped with all that would make him ready and versatile, not only to enhance his own pleasure and enjoyment, but that he may appear the equal, if not superior, of those with whom he mingles—the intellectual equal of the most intellectual of his community, to whom all may go for information. His professional education should be the best his money can obtain. A cheap medical education is like a cheap garment. It soon needs repairs, and is an ever-growing disappointment to its possessor. Hospital residence for a year at least is important. He should be familiar with the microscope, ophthalmoscope, etc. Thus equipped, his consulting-room should be well-appointed, his laboratory replete with instruments of research, etc., as well as necessary reagents for chemical work. As indispensable as, more useful than a horse and buggy—in the days of the bicycle at least—is a neat, bright, quick-witted, intelligent wife. She is a treasure, a cheerful helpmate and a loving companion; keeps his books and talks over his cases with him. She can learn to test urine, use the microscope, and help more than a qualified assistant because she is actuated by love and a common interest. Nothing is such a drawback as a slouchy, novel-reading wife. I have known more than one man's life blighted by such a companion. To marry on nothing is ill-advised, but one need not wait for ample means. When he begins to see his way clear to reasonable success, he should marry a sensible, well-educated woman, a little younger than himself. How now shall he attain success? By well directed, earnest effort. Establish an office or consulting hour and maintain it. The office hour is too much ignored by the country practioner. It is soon found out and then his patients will be sure to expect him at that time. Your general practitioner must be an early riser. When his hour is ended, he must promptly start on his visits, not making his visits too long, thus losing time and also the respect of his patients. Still he need not indicate by his actions that he is in a hurry; this is harmful also. With work well arranged, time will remain to spend in study of doubtful cases, reading, etc. He must subscribe for one first class weekly journal, also a scientific one. He must keep in touch with all that goes on in the world. Abstracts and first-class editorials he must have. He should be a member of his local society. He must win the regard of his fellows; ventilate his views only after he has acquired the faculty of speaking in a proper manner, and report interesting cases. The State and National societies should claim his membership and attention. He thus rubs off the cobwebs, renews or makes acquaintances, and while young may better offer his aid while an older practitioner goes to such meetings when at a distance. Jealousies between doctors are unjustified, yet they are frequent, especially in the country. More than half are without foundation, the result of misunderstanding, misrepresentation, hearsay, etc. Acquaintance prevents this, as it makes a man know how well his brother is disposed toward him. He should not be in a hurry to call in a consultant; but should first call his neighbor and thus exhaust the local resources before he sends for a specialist from the city. He may accomplish much for the patient and promote good feeling. Next he has duties to the community. He should guard it well, lest any violations of hygienic laws cause disease, and should suggest measures for the relief of any such. When this is done in a quiet unostentatious manner he will be listened to with respect and his advice will more likely be followed. Cultivate social life; this aids in many ways. As to compensations, money often is not the thing. Well-doing brings its own reward. Many would give money who are not able, but give respect, etc. Alluding to pictures of the general practitioner by the novelist, the speaker concluded: "What a privilege to be a member of a profession in which such men abound! What an honor to be one of those from whom such a type is drawn! Well may we glow with pride at the recognition it has received, and while taking new courage from the contemplation of such a life let us not fail also to allow our hearts to be softened by this example and bear with patience the many disappointments and petty annoyances that beset our daily path."

The President then read an essay, having for its title

THE EFFECTS OF NITROGLYCERIN UPON THOSE WHO MANUFACTURE IT.

In 1880 a large manufactory of nitroglycerin and its compounds was established upon the banks of the Delaware River near Gibbstown, three miles from Paulsboro, where he resided. Many of the women and their families have become his patients, and he has had ample opportunity to observe the effects of this material on the systems of those brought in contact with it. He detailed the mode of manufacture and gave some account of its properties. It was discovered in 1846 by Sobrers, later investigated by Railton and DeVrij. It is a heavy, pale-yellow fluid, inodorous, slightly soluble in water, soluble in alcohol. It is formed by the action of concentrated nitric acid on glycerin, in the presence of strong sulphuric acid at a low temperature. It is also called glonoin, trinitrin and propenyle nitrate. It is the principal ingredient of all high explosives, such as dynamite, under its various names of Judson powder, explosive gelatin—the material used in submarine mines—and enters largely into the composition of smokeless powder. Chemically it is an ether, being produced by the action of an acid (nitric) on an alcohol (glycerin). It is used medicinally in minute doses; in large doses it is an acrid poison. In the process of making, a large, tub-like vessel is used, fitted with dashers, which are rotated horizontally by a compressed-air engine. The vessel is lined with lead and has an extra lining of a continuous coil of lead pipe, through which a stream of ice-water is passed. In the center is a large thermometer on which the workman keeps his eye while the charge is being run. As the temperature rises he allows the flow of glycerin to increase; as it lowers, he increases the flow of mixed acid. Practice makes him expert and enables him to run a charge in about an hour. This man's position is a trying one, as he stands with both hands on the levers and his eyes fixed on the thermometer; not for an instant dare he relax his attention. The charge consists of 5500 lbs. of mixed acid in the proportion of 170 lbs. of sulphuric acid to 100 lbs. of nitric; and 14 per cent. of 770 lbs. of glycerin. These are run into the tub through separate spigots. After being thoroughly agitated together the charge is drawn off into a settling vat where the mixture separates by gravity into nitroglycerin and sulphuric acid. The former is drawn off and thoroughly washed with water; and the superfluous acid neutralized by an alkaline solution. The sulphuric acid is run through pipes to another building where all the residual nitroglycerin is extracted by a freezing process. The remaining acid is reconcentrated and again used. The nitroglycerin is stored in tanks, from which it is weighed and distributed in lead-lined copper buckets to the various sub departments. In the manufacture of explosives it is mixed with sawdust, nitrate of soda, nitrate of ammonia and nitrate of soda, wood pulp, etc. Explosive nitroglycerin is made by mixing 8 lbs. of gun-cotton, 10 lbs. of oxid of zinc and 82 lbs. of nitroglycerin boiled together at a temperature of 140 degrees. This is fully as explosive as nitroglycerin, and safer and more convenient. Judson powder is made by heating a mixture of bituminous coal, sulphur and nitrate of soda and adding a proportion of nitroglycerin. It is mostly hand labor; none relax the most intense vigilance. As a consequence accidents are rare; when they occur there is no means of ascertaining the cause, and there is little use for surgical assistance save in the case of those hurt by falling material. The doctor has the gruesome task of identifying and collecting the remains. In the apartments there is no noise; all is absolute silence. The machinery seems to work silently, and even the men who drive the mules that haul the trucks do without the usual mule stimulus.

The first condition to which my attention was called was known as the "powder headache." All suffered from it who had anything to do with nitroglycerin in any way. The head is generally sore; this has to be experienced to be appreciated. The workmen's wives, who do the laundry work, suffer severely every wash day. Not only the underclothing worn by the men, but any clothing, even the bedclothes, will cause this feeling. In time they become inured, but all complain of the ironing. Inhaling the steam from the hot clothes makes them very sick. Rubbing a little dynamite on the back of the hand, using a towel that a workman has wiped his hands or face on, lying on a lounge in one of their houses, remaining too long in a sleeping-room, auscultating their chests, all cause the headache in one not accustomed to it. Nitroglycerin when taken

into the system by absorption or inhalation, acts on the vaso-motor centers, causing dilatation of the left side of the heart and of the entire arterial system. There is often a distinct reddening of the skin of the face and extremities, sometimes of a pinkish hue, changing to lividity, and blueness of the nails, lips, ears and nose, with conjunctival redness. With this we have palpitation, thumping of the heart, pulse slightly quickened, soft and compressible, and an intense throbbing pain in the head, worse in the occipital region, and extending down the back of the neck. At every pulsation the blood can be felt surging through the brain, and in aggravated cases the movement of the blood can be felt in other parts of the body. The affected person walks lightly on his toes; touching the heels to the ground sends an additional darting pain to the head. Nausea and vomiting are often present, sometimes diarrhea; weakness, prostration and languor continuing over the next day. Some are more susceptible, but all are affected to a degree. My worst attack was caused by taking a nap on a lounge with my head on a pillow kindly loaned from upstairs by the nurse, on an occasion when I had to remain all night. Occasionally the headache is absent, but nausea, vomiting or diarrhea are present. One case had an eruption over the body like that from poison ivy. After three or four attacks he was compelled to abandon the work. In about a week's time the new men become accustomed to the poison and do not have the headache, or perhaps do not notice it, but nitroglycerin is rapidly eliminated and the relief is not permanent. Two or more days' absence from work will cause a return when work is resumed. Some have the headache every Monday morning. Thirty men are engaged in filling cartridges and are called "powder punchers." The shells are paper cylinders dipped in paraffin; each holds from two ounces to a pound or more of dynamite. They are filled by hand, with a funnel and rammer, the dynamite being taken up with a small wooden paddle. The hands and arms are covered with the material; each man handles an average of 1000 pounds of dynamite, containing 50 per cent. of nitroglycerin a day, making 2000 half-pound cartridges. After the headache and other acute symptoms disappear, another condition gradually develops. This is dependent on a dilatation of the heart, particularly on the left side, and of the entire arterial system. The pulse is soft, weak, obliterated by moderate pressure. The first sound of the heart is accentuated, the apex beat exaggerated; murmurs resembling anemic are heard, but most frequently from aortic regurgitation, and occasionally from mitral insufficiency. There is an engorgement of the left ventricle, the heart acts irregularly and palpitates easily. The appetite is poor, especially for breakfast. He rapidly loses weight; there are no dropsical symptoms, but a certain degree of mental dulness. The punchers are especially dull and drowsy during work. I call this condition "glonoinism."

The employes are all strong men who lead quiet, temperate lives, have the principal meal at the close of the day, use tobacco in moderation or not at all, rarely drink anything stronger than tea or coffee, alcohol in any form producing serious effects. A simple glass of beer will cause headache, palpitation and reddening of the skin. Cases have been known where men have become addicted to Gibbstown punch, composed of whiskey *ad libitum* and as much nitroglocerin as can be absorbed externally; the two mix in the system. This compound is guaranteed to produce a more violent and serious form of intoxication than any other combination known to man. Handling this large amount of nitroglycerin daily, the men's systems become impregnated; their wives, occupying the same sleeping apartment and doing the laundry work, become affected in a milder degree. In these cases all symptoms are much milder, but similar to those mentioned before; the uterine functions are deranged, undue hemorrhage at the menstrual period is seen, they have premature births and fewer children. Children born under these conditions are not as strong and vigorous as others of the community; cyanosis at birth is common, and they do not have the stamina to resist disease. Diphtheria, not as a rule fatal with us, has had several victims in these families. Other children's troubles are also especially severe and the fatality greater. It is not safe for one of these men to carry his infant in his arms for any length of time; he is sure to have a sick baby. Infants can not sleep in bed with their parents without dangerous results. Early after the establishment of the factory the doctor was called to a child who had been taken in the father's arms to quiet it; both had fallen asleep; after two hours he awoke and found the child seriously ill, head back, moving from side to side, eyes partially closed—indeed in a collapse; death soon ensued. Subsequent experience convinced him that the child was killed by contact with the father's body and clothing and by inhaling the breath. All depressant remedies must be avoided. The coal-tar derivatives can not be used at all. He found no record of phthisis among the men, but three of their wives have died of it; cases of pneumonia have died suddenly. Bromids have no effect on the headache, and irritate the stomach. Iodoform may be used when indicated, in capsules. The treatment of glonoinism is palliative, and the work must be abandoned for a cure. Strychnia gives the best results. Dr. Laws took the ground that it was probable that the use of smokeless powder so much by the Spaniards in the late war had caused their defeat so rapidly, owing to the glonoinism resulting to the men. Had this been used by our men, it is possible that the majority of our men would have been very sick in a very short time, but possibly they could have become seasoned to it. In the navy, with the movement of the vessels, the air might have blown off the results, but this point needs further investigation. It is well known that sportsmen who use smokeless powder often suffer from headache, and this is an objection to the use of dynamite in mines, etc. The combustion is never complete, and a large proportion of nitroglycerin is thus diffused in the atmosphere, or in certain cases the powder is found slowly burning near the gun. He concluded by giving at some length the results of careful observation by instruments of precision.

The Historical Address was delivered by Dr. L. M. HALSEY, of Williamstown, and concluded the program. A social hour was then spent, with a banquet, followed by toasts. After an address of welcome, the AMERICAN MEDICAL ASSOCIATION was toasted and Dr. Wm. B. Atkinson asked to respond. The Doctor took the opportunity of showing the work done by the ASSOCIATION, its vast increase in power and membership, its relation to State and local medical societies, and urged upon all the importance to the profession of every respectable physician becoming a member; the benefit to each by the literature of the ASSOCIATION, the advantage of the membership to each, and finally the power it would give the ASSOCIATION in the counsels of the nation, if in place of 8000 members it had 50,000 or more, as it should have. Then it could demand national legislation with the surety of obtaining it when backed by such a membership, extending to every town, city, etc., of the entire Union, and no longer would be seen the spectacle of the crying need of a National Board of Health with no attention paid to the demand on the part of Congress.

SELECTIONS.

Laugh and Get Well.—*Scalpel* quotes the following story from "Bonaventure des Periere": "An ape is the hero of this discourse, whose master fell sick of a fever, so grievously in fact that the doctors had to be called in. At first they clysterised him, and then they drew his blood, according to the mode of treatment at that time universally in vogue. Next, for four consecutive days they drenched the poor man with drugs of various sorts; and finally he was ordered a mixture which the apothecary brought him with his own hands. It was then early in the morning and the patient was asleep; so placing the bottle on a table and covering it carefully with a cloth, this black swan among practitioners, rather than interfere with nature's sweet restorer, incontinently departed. After a little while the sick man awoke of his own accord and saw that his potion had arrived; but there was no one at hand to administer it to him, the inmates of his house having all gone out in order not to disturb his repose. The door of the sick chamber happened to be ajar and presently in comes the ape to pay his respects to his master; but the first thing the inquisitive creature did was to mount on the table where the covered-up medicine was standing. Lifting a corner of the cloth he began to sniff at the open mouth of the flask; and, to judge by his expression, the odor was not much to his liking. For all that he repeated the action several times, and at last ventured on a taste—for his curiosity made it absolutely impossible for him to refrain. The compound had a bitter-sweet flavor and master ape withdrew his muzzle very smartly, twisting his lips about in disgust and pulling the most comic grimaces it is possible to imagine. Before long, however, the sweetness overcame him, and returning to the charge he took a second sip, then a third, and so on, until at last he finished the stuff.

The poor, long-suffering patient's precious mixture was drained to the last drop! Now it happened that the individual in question, who was looking on all the time, was delighted beyond measure at the antics of the ape. So much so, indeed, that he clean forgot all about his illness and burst out into such a hearty roar of laughter that he straightway recovered. Owing to his access of joy, so sudden and so unexpected, his spirits revived, his blood grew thin and his humors returned into their proper channels, thus extinguishing the fever. While he was revelling in his restored health the apothecary reappeared on the scene and inquired how he found himself and whether the last medicine had operated, but the ex-patient was so full of merriment that he was unable to speak intelligibly. He could do nothing but laugh; whereat the other waxed exceeding wroth, believing that he was the butt of the unseasonable mirth. Then, with a great effort, the laugher contrived to exclaim: 'Ask the ape what operation it has had.' As may be supposed, this answer did not tend to smooth matters, and the incensed druggist was about to give vent to some furious rejoinder when lo! the ape himself afforded a practical solution to the imbroglio, while at the same time supplying proof as regards the potency of the mixture. Comprehending at once that the animal must have acted as the sick man's *locum tenens*, and being happily gifted with a sense of humor, the worthy apothecary forthwith went off into a roar on his own account; and the situation, lately so strained, resolved itself into a friendly duel between the ex-patient and his medical adviser as to which should laugh longest and loudest.

Veratrum Viride in Puerperal Eclampsia.—Dr. John Gordon in the *Lancet* (January 15) reports that one hypodermic dose of five minims of the fluid extract of veratrum viride resulted in cessation of convulsions in the parturient woman, reduction of arterial tension and pulse-rate, the laxation of the rigid os uteri. After this labor progressed normally, consciousness gradually returned and after two days the patient was in good condition, no other treatment being used. The case was interesting as having been treated solely by the action of veratrum viride, and therefore one is presumably free to deduce that the improvement which followed was due to the action of the drug. The outstanding features in the action are the lowering of arterial tension, the slowing of the pulse-rate and the absence of convulsive seizures after the dose of the drug was given. Within fifteen minutes of administering the dose there was a perceptible change in the character of the pulse. It had been firm, hard and bounding, but now became softer, was full and easily compressible. The number of the beats was also reduced from 92 or 100 to 84, and there was slight inequality in the value of the beats. Five minutes later the pulse-rate was reduced to 72; in another five minutes the pulse had become 54, and fifteen minutes later still it had reached its minimum of 52. Afterward for two hours the pulse-rate was taken at intervals of fifteen minutes and kept varying from 54 to 60 per minute. When taken five hours later it was still 56 and five hours later again it was 60. The etiology of puerperal eclampsia is obscure. The frequent albuminuria with which it occurs gave rise to the opinion that it was the result of uremia, although cases occur where there is no albumin present, and other patients with an abundance of albumin escape, it is thought that renal insufficiency is the most frequent if not invariable cause. Traube and Rosenstein refer its causation to acute cerebral anemia resulting from changes in the blood incidental to pregnancy, the watery condition of the blood being associated with increased arterial tension. Dr. Angus Macdonald of Edinburgh found from postmortem examinations extensive anemia of the cerebro-spinal centers with congestion of the meninges without edema. He attributed the convulsive attacks to irritation of the vasomotor centers from an anemic condition of the blood produced by the retention in it of excrementitious matters that ought to have been thrown out by the kidneys. Applying the recognized physiologic actions of veratrum viride we know that one of its alkaloids, jervin, is able to reduce the force of the heart beat by its direct influence on the cardiac muscle, and that it is capable also of producing a general vasomotor paralysis; that it likewise reduces the pulse-rate by a direct action on muscle, while the other alkaloid, veratroidin, by stimulating the inhibitory nerves also reduces the pulse-rate; and both alkaloids, namely, the jervin and the veratroidin, are, in addition, depressants to the motor centers in the spinal cord. We have, therefore, in veratrum viride, an agent the physiologic properties of which meet the supposed pathologic conditions in puerperal eclampsia, namely, increased arterial tension and cerebrospinal excitement.

Pasteurized Cream and "Viscogen."—A recent bulletin of the U. S. Agricultural Department treats of the sterilization of cream. It shows that some of the advantages of this product are that it is more convenient to handle, there is less loss from spoiling, and it is free from disease germs. The cream will keep for several days without souring. An objection to pasteurized cream is its lack of consistency. The cream does not appear to be so rich as normal cream, because it is thinner and less viscous, and does not whip so readily. So strong has this objection become on the part of consumers that it has materially retarded the introduction of this method of supplying cream. The Wisconsin Station has been studying the problem for some time, and has recently suggested a remedy. It is found that the consistency of pasteurized cream may be completely restored by the addition of lime in solution. On account of the slight solubility of lime the use of simple lime water is impracticable, as it dilutes the cream to an undesirable degree, although even lime-water materially increases the consistency of pasteurized cream. It is proposed to use lime dissolved in a solution of granulated sugar (sucrate of lime). Such a lime solution contains more than one hundred times as much lime as lime-water. Consequently it may be added to cream in sufficient quantity to produce the desired result without perceptibly changing the cream otherwise. This solution of lime in sugar is called "Viscogen," on account of its viscous-producing properties, and the treated products are called "Visco-cream," "Visco-milk," etc. "Viscogen" is not a commercial article, but may be easily prepared. The method described by the Station for its preparation is as follows:

Two and one-half parts by weight of a good quality of cane sugar (granulated) are dissolved in five parts of water and one part of quicklime, gradually slaked in three parts of water. This milk of lime should be poured through a wire strainer to remove coarse, unslaked particles and then added to the sugar solution. The mixture should be agitated at frequent intervals, and after two or three hours allowed to settle until the clear supernatant fluid can be syphoned off. Where large quantities are made, we have found it convenient to mix the ingredients in a revolving barrel churn. The clear liquid (Viscogen) should be kept in well-stoppered bottles which are filled full, for the reason that it absorbs carbonic acid from the air, thus reducing its strength, and also because where air has access to the solution, it darkens in color after a time. This latter chemic change, however, does not seem to impair its usefulness. The quantity of lime recommended in the above formula is considerably more than will be dissolved by the sugar solution. This excess is added because of the impurities contained in our Wisconsin lime, which is of dolomitic origin, and hence contains nearly as much magnesia as lime. As these impurities are practically insoluble in the sugar solution, they have no effect in the prepared viscogen.

PRACTICAL NOTES.

On the Use of Thyroid.—According to the *Medical News*, September 17, the Berlin professor, Dr. Thierfelder, has advanced the following opinion as to the modus operandi of thyroid therapeusis. In the first place, the effects upon metabolism may be stated as follows: 1. Upon the nitrogenous

metabolism and elimination, its influence is stated, by some, to remain normal; by others, including Chittenden, the elimination is stated to be slightly but uniformly increased, the diet remaining the same. Those observers who have found the daily elimination of nitrogen the same, or decreased, have possibly failed to take into account the injurious effect of large doses of thyroid upon the appetite and digestion, with consequent decrease in the amount of food (and nitrogen) ingested. The increase in the amount of nitrogen eliminated remains, however, always slight. 2. The effect upon general metabolism is shown by the decrease in weight which follows the prolonged administration of thyroid, especially if in excessive doses. As there is not a corresponding increase in the amount of nitrogen eliminated, this loss must come chiefly from the non-nitrogenous elements of the body, that is, fats or the carbohydrates. This is apparently proven in the following ways: *a*. There is a marked increase in the amount of the CO_2 eliminated by the body, showing increased oxidation of the carbonaceous materials of the body. *b*. The loss of weight is most pronounced in those suffering from obesity, leading to its use as an "anti-fat" remedy. *c*. In mild cases of diabetes mellitus the sugar may be made to diminish or disappear entirely under the use of thyroid. These effects may be explained by one or both of the following hypotheses: 1. It may exert a specific stimulating effect upon the areolar tissues of which adipose tissue forms only a modification, due to the deposition of fats. 2. It may increase oxidation by increasing the oxidizing power of the blood. Its demonstrable effects upon the blood are limited, usually showing a slight increase in the number of mononuclear leucocytes, other changes in the blood, found at times, being explicable by changes in the organism, the alteration in blood constitution being secondary, as for example, the increase in hemoglobin and red corpuscles after administration of thyroid in bleeding fibroids.

Compound Fracture of the Patella.—Mr. Battle, in the London *Lancet*, September 10, reports the case of a cabman, aged 53 years, who on April 22 was injured in the knees by the kick of his horse. On the right knee there was a transverse lacerated wound extending almost the whole width of the limb. Through this opening the interior of the knee joint could be seen, and it was at once evident that the right patella had been broken transversely into two large pieces, though several smaller fragments could be felt. The two large pieces formed about five-sixths of the patella. The wounds were temporarily dressed with an antiseptic application, and a back splint was applied to the right leg. On the evening of the day of admission, about five hours after the accident happened, the patient was anesthetized, and Mr. Battle proceeded to wire the bone. An incision three inches long was made directly upward from the middle of the horizontal wound on the right knee, the flaps were reflected on each side of this incision, and the knee-joint was completely exposed. The joint cavity, the bony fragments and the surrounding parts were then thoroughly washed in a solution of perchlorid of mercury. Two or three small fragments required removal. The two larger pieces of bone were joined together with silver wire and the ends of the wire, after having been twisted, were hammered on to one of the fragments. The aponeurosis over the patella was united by silk sutures and the edges of the skin wound, having been carefully pared, were drawn together with interrupted sutures. A drainage tube was inserted through a separate incision in the outer side of the joint. A dressing of double cyanid gauze and absorbent wool was applied and the limb was enclosed in a plaster-of-Paris splint. The wound on the left knee was sutured and dressed in a similar manner. On April 22 the right knee was dressed and the drainage-tube removed. On the 24th the temperature rose to 100, but fell to normal on the bowels being opened by an enema. On May 3 the skin stitches were removed and the plaster-of-Paris splint exchanged for a wooden back splint. On the 12th the patient was allowed to sit up and on the 19th the splint was removed, a small dressing only being applied. On the 24th he was discharged from the hospital; he had firm union of the patella and was able to walk. Further improvement has resulted.

Suppurative Splenitis from Tight Lacing.—Dr. B. M. Cromwell describes a case of suppurative splenits caused by tight lacing and violent exercise, which was successfully treated by operation. The patient was a strong, healthy girl, 17 years of age, who in order to escape an impending shower ran for the greater part of a mile on a hot day. After running for some time she felt a pain in her left side, and reached home in a state of more or less collapse. The pain ceased before she reached home and did not return until the next day, after which it was continuous. Dr. Cromwell, on examining her two or three days afterward, found a deep sulcus about the margin of the ribs, and in answer to her inquiries the girl explained that while she was running her corset was loose enough but the band of her petticoat was too short and she had to pull it very tight to button it. Above and below the sulcus there was a marked tumefaction. Percussion revealed dullness over the whole left side, extending to near the brim of the pelvis and anteriorly to near the median line of the abdomen. The edge of the tumefied spleen could be plainly felt around the greater part of this dull space. The diagnosis was an enlarged and inflamed spleen, and as no improvement followed from iodin ointment and blistering, an incision was carried through the abdominal parietes into the substance of the spleen. At first there was a copious flow of bright arterial blood, then a small ribbon of pus was mixed with it, and as the pus increased in quantity the blood diminished until the escaping fluid consisted entirely of pus, which continued to be discharged for many days under the influence of poultices, and for several days after it ceased there was a discharge of serum. The total amount of blood, pus and serum was estimated at about 30 oz. The girl made a good recovery and is now in excellent health.—*Maryland Med. Journal*, Aug. 13.

Cocain in Ophthalmic Practice.—Dr. Theobald, in the *Johns Hopkins Hospital Bulletin*, writes a word of warning about the too free use of cocain in the treatment of diseases of the eye. It has come to be quite common for the general practitioner to use cocain in eye inflammations, the inducement being that it diminishes the pain temporarily and so causes a measure of relief. The conditions in which it is used are various. He says: "I have met with many instances in which it was prescribed in simple catarrhal conjunctivits. There seems to be no indication for its employment under such circumstances, and it is capable of doing much more harm than good. Because of its pronounced disturbing effect upon the nutrition of the cornea, cocain is not a remedy to be used carelessly in eye diseases. It acts, as you know, through the sympathetic nerves or chiefly in that way, and, besides anesthetizing the eye, it dries the cornea to a remarkable degree. The cornea not only becomes dry, but the epithelium becomes loosened, so that it is easily rubbed off, sometimes by the friction of the lids, or from the slightest touch of the instruments used. Any agent that has so marked an effect as this upon the nourishment of the cornea certainly seems not to be a safe one to use, unless there is a clear indication for its employment. The field of usefulness for cocain, apart from its anesthetic action, is extremely limited. I scarcely think, indeed, there is any occasion to prescribe it as a remedy in eye diseases, though it may be used sometimes to increase the action of other drugs: for instance, atropia, or homatropia, will dilate the pupil more quickly and powerfully if combined with cocoain. Even here I prefer to keep the solutions separate, and to instill the cocain first and then the atropia. It is also useful as preliminary to the application of astringents or caustics, like the sulphate of copper or nitrate of silver, as it greatly lessens the discomfort, but this is only another phase of its anesthetic action.

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THE BACILLUS PYOCYANEUS IN HUMAN PATHOLOGY.

In 1889 CHARRIN ("*La maladie pyocyanique*,") published a thorough research concerning the bacillus pyocyaneus. Before that time practically nothing was known concerning this organism in connection with diseases of man or in animals, although its occurrence in green or blue pus had already been observed by GESSARD. Experimenting upon rabbits, CHARRIN soon found that the bacillus gives rise to a disease of definite clinical entity, and to this he gave the name *maladie pyocyanique*. Others have studied pyocyaneus infection in the dog, as well as other animals, but the rabbit is the most susceptible.

Infections with the bacillus pyocyaneus in man bear a marked resemblance to the experimental forms, at the same time it may, like other pathogenic organisms, occur in a purely saprophytic condition in various parts of the human body. Thus it has been found in the saliva, sputum and sweat, also in the stomach, and KOCH early observed it in tuberculous cavities and regarded it at that time as incapable of any pathogenic action.

KOSSEL and others have pointed out its relation to certain cases of purulent inflammation of the middle ear in children. ERNST[1] of Boston observed it in the pericardial exudate during life, and G. BLUMER[2] found it in practically pure culture in a case of acute angina that clinically resembled diphtheria. It has also been isolated in cases of urinary infection. Barker[3] and others have shown that it may produce interesting cutaneous lesions. Meningitis, bronchopneumonia, diarrhea and dysentery have all been demonstrated to have been caused in a few instances by this organism. And, finally, it has been shown by a number of observers that it may give rise to a general infection.

In the *Philadelphia Medical Journal* of Sept. 17, 1898, Dr. LARTIGAU of Albany adds a report of three cases in which serious inflammatory conditions and general infection resulted from invasion of the bacillus pyocyaneus. In the first case there was a general infection, which may have been primary in the culde-sac of Douglas, thence extending to the general peritoneal cavity and into the system; but it would seem even more probable that the original infection came from the genital apparatus. This case, and one of BARKER'S, demonstrate the occurrence of acute peritonitis due to the bacillus pyocyaneus. In the second case the bacillus was isolated from hemorrhagic infarcts in the lungs and the right kidney, and from the exudate of a double serofibrinous pleurisy. In the third case a general infection took place from an amputation stump of the leg, on account of long-continued necrosis of the tibia.

Undoubtedly many cases of infection by the bacillus pyocyaneus escape recognition because the organism fails to produce its green pigment for days, or perhaps not until it has been passed through animals. In a bacteriologic study of 200 cases of suppurating wounds, JADOWSKI[4] observed the organism only twice; in a systematic study of 800 consecutive autopsies made at the Johns Hopkins Hospital, BARKER encountered eleven cases of local pyocyanic infection; and the three cases observed by LARTIGAU were observed in the bacteriologic examination of 100 consecutive autopsies.

The *maladie pyocyanique* in man resembles the other more familiar septicemias; the general symptoms are those of all infectious diseases. The temperature usually remains high; irregular oscillations are not unusual. The spleen is enlarged, and the urine ordinarily contains a small amount of albumin. Specific pulmonary lesions may develop as bronchopneumonia and pleurisy. Intestinal disturbances, are marked by diarrhea, the dejecta in some instances containing more or less green pus; or, the pigment may become more marked after the stools have been exposed to the air. Among other rather interesting symptoms are the cutaneous lesions in the form of bluish eruptions or petechiæ, or more rarely, papular rashes. These lesions are generally found on the trunk, limbs, and scrotum, and they may appear at different periods in the course of the disease. From the fluid in the bullæ the bacillus pyocyaneus has been occasionally isolated.

[1] American Journal of Medical Sciences, 1894, Vol. cvi, p. 396.
[2] Johns Hopkins Bulletin, 1895.
[3] This Journal, July 31, 1897.
[4] Quoted by Lartigau.

There is also a chronic form of the disease, which has been studied quite a little experimentally, and this is characterized by hemorrhages into the skin, paraplegia and monoplegia, neuritis, myelitis, contractures, and muscular atrophy, as well as vasomotor and sensory disturbances. This remarkable nervous form of pyocyanic infection has lately been observed in man. JADAKOWITSCH is quoted by LARTIGAU as having described an interesting case of this nervous type. The patient had a chronic eczema of the legs of ten years' standing, frequently complicated by periods of ulceration, the secretion being blue. At these times he would manifest peculiar nervous symptoms; thus, at the end of a period of suppuration, paresis and anesthesia of the whole right arm developed. After another siege of blue suppuration, weakness and wasting, with dyspnea and rapid pulse developed, recovery taking place four months later. After the third return of the blue suppuration there occurred diarrhea, sensory disturbances involving particularly the ano-gluteal and scrotal regions, and in this stage the bacillus pyocyaneus was isolated from the urine.

Among the anatomic lesions of pyocyanic septicemia may be mentional focal necroses, hemorrhages, and parenchymatous degenerations. One especially noteworthy feature is the development of intestinal ulcers in systemic infection. These ulcers more frequently form in the small bowel. In some examples there is merely a superficial necrosis of the mucous membrane, sometimes diffuse, sometimes limited. As far as known, these ulcers, which rarely pass beyond the mucosa, have not caused perforation. There may also be an acute hemorrhage enteritis, with or without ulceration. The stomach is commonly the seat of such inflammation. There may be multiple minute hemorrhages into the serous membranes.

The diagnosis of local infections can be made only by means of bacteriologic examination. The diagnosis is frequently aided by the presence of green pus on the dressings. In cases of general septicemia it would be extremely hard to separate it from other forms of infection; the intestinal symptoms, if present, or the existence of blue or green pus in some local lesions, would be very suggestive. The WIDAL test might be of service in distinguishing typhoid fever from such cases. The demonstration of the bacillus pyocyaneus in the urine or in the stools might further the diagnosis. Experimentally the serum diagnosis in pyocyaneus infection has been demonstrated, and this might prove to be of considerable clinical utility.

POSTOPERATIVE PSYCHOSES.

A subject that formed one of the chief themes for discussion at the late annual Congress of French Alienists and Neurologists and which was also prominently brought before the corresponding body in this country at its latest session may be fairly considered as one of the questions of the day of modern psychiatry. As presented, it is not altogether a simple one; it may be admitted that surgical interventions are sometimes followed by insanity and that there exists in such cases a relation of cause and effect, but it will still remain to be settled whether this is anything more than one of the accidents that may occasionally happen without any special significance, as well as—allowing this to be not established—whether there is any special type of mental disorder thus produced, and what particular class of operations are most likely to have such consequences. It is more particularly within late years that certain gynecologic operations have been largely credited with a special influence in producing mental disturbances, and this subject has been actively discussed, not only in the bodies mentioned, but also in the Paris Society of Surgery and elsewhere. It is not an unnatural presumption, when we consider the marked effects of early ablation of the testicles on the organization and the profound systemic disturbances that accompany the menopause, that the premature removal of, or interference with, the ovaries might be sometimes followed by serious mental disorder, and it is probable that this preconception has had its influence, not only in inciting observation in this direction, but perhaps also in affecting the estimation of the results of operations in so far as the special mental symptoms are concerned. A temporary or permanent mental disturbance following a gynecologic operation would be, it may be, more readily attributed to the interference with the ovary than to other causes—predisposition, general shock, the anesthetics used, etc.—that may have had the predominant part in its production. The theory of internal secretion which is just now prominently before the medical profession also affords suggestions in this connection that favor the notion that serious mental disturbances may follow ovarian operations. A priori, there would seem to be some reasonable grounds for the belief that there might be a special liability to postoperative psychoses from certain gynecologic operative procedures.

As regards surgical operations elsewhere than in the genital organs, the presumption is less evident, but postoperative mental disturbances may follow any kind of surgical interference and, according to one authority at least, they are apparently rather more frequent after operations on the eyes, than those of most other regions. From what we know of the mental effects of surgical operations in themselves, which have been made the subject of an interesting study by WHITE, a few years back, it would not seem improbable that an occasional attack of insanity should be one of their untoward results. Just how far, however, this is to be attributed to the operation itself and not to other accessory conditions is still, for most cases at least, an open question.

The report of M. RAYNEAU to the Association of

French Alienists and Neurologists and the discussion, in which such well-known alienists and surgeons as REGIS, PICQUÉ, JOFFROY, GARNIER and others participated, are of especial interest as affording an index of what may be assumed to be the present state of opinion in that quarter on this special subject. As a whole, they leave the question still in an unsettled condition, and one that affords the chance of a rather wide choice of opinion without cutting loose from respectable authority. According to M. RAYNEAU there is no special type of postoperative insanity, and except in case of thyroidectomy or operations on the cranium, the chief part in the genesis of postoperative psychoses must be attributed to hereditary or acquired predisposition, where only a slight cause is necessary to upset the unstable brain. As to any special liability from gynecologic procedures, he rejects it altogether. M. REGIS, on the other hand, whose psychiatric experience is certainly wide enough to give weight to his opinion, held that there is a special type, that of mental confusion, that commonly appears in the insanity following operations, which itself may be due to various causes—shock, the anesthetics, septicemia and in the most typic cases, to auto-intoxication either already existing, or induced in persons of weak resistance by the shock of the operation itself. Others in the discussion laid weight on the predisposition, and one with extensive army experience called attention to the rarity of this complication in military surgery, which he credited to the selection of recruits eliminating the predisposed. The majority of French surgeons, it would appear, consider the operation itself and its locality as an unimportant factor in the production of these postoperative mental disturbances.

The subject is a complex one, and it is evident that no one series of observations, however extensive, can have much value for the decision of the questions involved. To get the complete facts as to the effects of operations on the mind the whole subsequent history of the patients must be followed up, and remote as well as immediate results be ascertained. Especially is this true as regards the results of operations on organs like the ovaries and testicles and those on the brain itself. Even the effects of extensive major amputations might well be studied for their remoter mental effects; the ablation of extensive portions of the body has its effects on the structure of the brain, and this may sometimes involve the mind. Apparently little attention has been given to this possible later type of surgically caused mental derangement, but it is properly to be included in the postoperative psychoses.

The mental disorders immediately following surgical operations may well be due in many instances to the effects of shock, anesthetics, or any other of the multiple possible factors, and the question of predisposition is always to the fore. In fact, the predisposed form so large a proportion of the population that it is almost remarkable that so serious a general provocation as is afforded by a surgical operation, with its adjuncts of toxic anesthetics, shock, etc., is so rarely attended by immediate or secondary mental disorder.

LEGITIMATE PRESCRIBING.

Many editors have pointed out in the columns of medical journals the importance of accuracy in therapeutics, or in other words, the necessity of using those pharmaceutic or chemic substances which are placed in our hands in such a condition of purity or excellence that no doubt concerning their reliability can possibly arise. It may not be out of place for us, at this time, to call attention to an even more pressing need on the practicing physician, and that is, the necessity of avoiding the use of compounds devised by persons ignorant of chemistry on the one hand, and of medicine on the other, who have sufficient pharmaceutic knowledge to be able to prepare for the market preparations pleasing in appearance, and who have sufficient capital and unlimited impudence to claim that most of the ills which afflict our patients can be relieved by the employment of their peculiar specialty. There is not a physician in this broad land who does not receive several times a week circulars, advertising, not only legitimate pharmaceutic preparations, but various compounds of cheap and ordinary vegetable and mineral drugs to which have been given trademarks and registered names, and which, in consequence, cost the patient far more than a simple prescription contaning the same ingredients. Thus, it is well known to most of the profession that a very widely advertised drug, designed chiefly to relieve pain and reduce fever, contains as its most active ingredient, acetanilid, and we have before us, at this moment, a circular recommending a number of preparations, which supposedly contain quinin, to which are added other substances designed on the one hand to produce movements of the bowels, to act as a tonic, and to be a substitute for that most valuable and cheap alkaloid, quinin, itself. Further than this, every one of these circulars contains a number of letters from supposedly reputable practitioners, stating that they have used these products and obtained extraordinary results therefrom. In some instances these results have not really been due to the use of the compounds named, but the patient has happened to improve at the time that they were administered, and, according to the argument of *post hoc propter hoc*, the new compound has received the credit, and the physician has congratulated himself upon the discovery of a new remedial agent, when in reality he should be condoling with himself that he has lacked ingenuity and common sense to such an extent as to have been unable to devise for himself a similar combination, and further, has been misled into awarding the credit for the recovery to a substance which does not deserve it.

The very large number of compounds which are placed upon the market, which chemic analysis soon proves to be but mediocre preparations, is an illustration of the sad lack of medical education possessed by some practitioners. It is humiliating to think how many of the profession are willing to take the "say so" of the commercial traveler, who often is neither a graduate of pharmacy nor medicine, as to the therapeutic efficiency of some drug which he may be hawking about the country. Is it surprising that the laity will patronize Indian herb doctors and traveling salesmen in highly decorated wagons, when physicians will use products compounded and marketed with no greater possibilities of reliability than those which we have named. It is a characteristic of the Anglo-Saxon race that they are independent in thought and action, but it would seem as if some members of the medical professional were willing to be led hither and thither by the specious arguments of persons who have no more claim to our confidence than that which they can win by a smooth tongue and flattery. No physician should prescribe a remedy unless he has a clear idea of what he wishes to accomplish, and, therefore, it is necessary that he shall first make an accurate diagnosis, and second, that he should have a clear idea of the physiologic action of the remedy which he employs. How is this possible when he is simply given the information that such and such a preparation is useful in such and such diseases, and has placed in his hands a combination unknown to chemistry, to the honest pharmacist and to the pharmacologist? Why should the physician prescribe such products any more than he would prescribe an herb handed to him by an old woman at the roadside, with the statement that she had found it useful in the treatment of certain ailments? She, at least, would have put it to the clinical test, which is something the average promoter of these combinations has never done. Let us remember the old adage, "be sure you're right, then go ahead," and let us have enough respect for ourselves and our profession to give only those remedies which come to us through reputable and ethical channels.

THE SUFFERING OF TROOPS ON TRANSPORTS.

The daily press of this country has told us of the foul condition of the ships used in transporting troops from Santiago to Montauk Point, and of the bad water, bad food and bad treatment which our unfortunate soldiers received during the voyage which brought them from the field of victory, and of subsequent prostration by disease, to a convalescent camp in the United States. No doubt there was much suffering on many of the troop ships. The men were broken down by their exposures and by attacks of yellow fever, malarial diseases and dysentery. Their transportation was decided upon to avoid the greater danger of a continued stay in the miasmatic locality which had sapped their strength. Great danger attached to the process of removal. Great care had to be exercised by medical officers at the point of embarkation to prevent the dissemination of yellow fever in these crowded vessels, and that no great disaster occurred on any of these ships reflects credit on the medical officers concerned. It was to be expected that there would be much individual suffering on these ships, but certain official reports which we have seen indicate that there were few grounds for the extravagant headlines and ghastly exaggeration with which the newspapers greeted the arrival of every fresh transport. Captain WALTER D. MCCAW, Assistant-Surgeon U. S. Army, states that the Sixth and Thirteenth regiments U. S. Infantry embarked August 7, on the *Vigilancia*. The troops were reduced to the last degree in health by malarial poisoning and repeated outbreaks of fever. In fact, all were either sick and still suffering from fever or manifested the results of the previous attacks by extreme feebleness and profound cachexia. The sanitary conditions on board were fairly good; the ventilation of the sleeping quarters of the men was satisfactory. The vessel was not overcrowded, and plenty of deck room was available. As the voyage was made in favorable weather the health of the command improved marvelously. The travel ration could not be eaten by the majority of the men, but hot soup was served, which proved of great value. Sixty-seven men were on sick report on embarkation. No death occurred during the voyage, and on arrival off Montauk Point, August 14, the sick list was reduced to fifty-two, and these were mostly convalescent. The gain in general health was most gratifying.

Every statement made by the medical officer is sustained by General ADELBERT AMES, who was in command. The vessel furnished ample and comfortable accommodations for officers and men, the command numbering 698 men. The ship's officers and crew were attentive to all the wants of the command, providing every means possible to assist the troops in the preparation of their meals and making them comfortable in their quarters. The water for drinking and bathing was good and plentiful. The weather was exceptionally good during the entire voyage, and the health and spirits of the men improved each day.

This relates to only one of many voyages made, but it suggests that if we had more of these official reports before us we would have to correct many of the impressions made upon our minds by the perusal of the press dispatches.

THE INTERNATIONAL TEMPERANCE CONGRESS.

Many persons have the impression that temperance work is confined to this country and England, while on the Continent, the art of moderate and temperate drinking has become so perfected that temperance work or societies are not needed. It will be news to

such people that active temperance efforts on the Continent, in the wine and beer districts, are more intense and better organized than in this country.

Eighteen years ago the leading temperance men on the Continent met at Brussels and organized an International Temperance Congress. The members were largely medical men, teachers and government officials, with a few philanthropists and clergymen. The leading questions discussed at this congress were the best means of obtaining distilled liquors which contained pure alcohols, the physical action of pure artificial alcohol; also the best methods of preventing the use of poisons in mixed drinks. A committee of scientists and physicians presented an elaborate report on this subject at the next congress, two years later. The third congress was held at Antwerp in 1885, and the questions of the effects of wine and distilled spirits were discussed. In 1887, a very large congress of members from all the continental countries met at Zurich, and the nutritive value of wines and spirits was discussed. The next congress was held at Christiania in 1890, and saloons and education of the people were discussed. The next meeting, at the Hague, discussed and condemned moderate drinking. Two years later, at Basle, a still larger meeting took up advanced ground on prohibition and total abstinence as sanitary and scientific questions. At Brussels, in 1897, this congress brought out a large number of the leading medical men and teachers of Europe. The dangers from the use of alcohol, and the perils from and remedies for inebriety were the leading subjects. The condemnation of alcohol, except as an anesthetic, by leading medical men and teachers, was very prominent. France was shown, from statistics, to be the most drunken country in Europe; more spirits were consumed per head, and the assertion was made, "that France was rapidly becoming a nation of inebriates."

This congress and its reports have roused a great interest, in all the scientific and sanitary centers, and the problems connected with it are subjects attracting a great deal of attention.

A preliminary program for the next congress, at Paris in 1889, has been issued. Dr. LAGRAND, the president, is an eminent specialist, Superintendent of the Government Insane Asylum, and author of "Mental Medicine." The last congress comprised five hundred delegates and was in session three days. The coming congress will be much larger and will be divided into four sections. The first will discuss educational methods, temperance teachings in schools, and various moral means of prevention. The second section will take up the social and economic question of the drink evil; its medicinal and hygienic aspect; the action of alcohol on the body and its influence in sickness and mortality. The third section will study asylums for inebriates and their medical cure and treatment, by drugs and hygienic means and other measures. The fourth section will be devoted to preventive means, and efforts to increase habits of total abstinence, the formation of temperance restaurants and the work of societies to help on the growth of total abstinence. It is quite clear that this program will bring out many new facts and advance the subject materially. A number of leading men in this country have been invited to take part in this congress, and the scientific interest which these great gatherings create is already beginning to be felt in this country. The political and religious agitations of this subject here have largely obscured its scientific side, and medical men have not taken up the subject in the spirit of careful research. We are clearly behind in our medical study of the drink evil. The questions concerning the action of alcohol, and inebriety and its cure and prevention, are vital in almost every neighborhood of the land, and it would seem to be a most practical subject for medical men to discuss and study. Some of the most eminent men in Europe are giving attention to this subject, and a very wide, unoccupied field is opening in this country for similar work. The idea of these great congresses is to have some general symposium of all the facts, which will educate public sentiment in the right direction, and enable legislation to act along rational lines without error. Another idea is, that medical men, teachers and scientists are the most competent authorities to study and decide upon these topics, and that sentiment and theory have a small place in the practical solution of these problems. Here in this country we have two societies, the Association for the Study and Cure of Inebriety, and the Medical Temperance Association, one taking up the malady of inebriety, and the other, the problem of alcohol and its effects. Both of these societies are confined to medical men, and their studies are practically unknown to the masses. If we could have some organization to present the facts to the public in an authoritative way, above prejudice, a great advance in the temperance work of the country would follow.

THE YELLOW FEVER.

Yellow fever has again made its appearance in Louisiana and Mississippi. The familiar scenes of panic and local quarantine are once more to the front. The gush that was ladled out in certain quarters about "stamping out" the fever by the long-range method now prevalent in the Washington Bureau, is now seen to have been premature. Hundreds of refugees fleeing from the infected localities, and the interference with travel, constitute irrefutable evidence of the monumental failure of the Marine Hospital Bureau as at present managed to stop the spread of the disease.

The passage by Congress of the bill creating a Bureau of Public Health, is growing more and more necessary.

CORRESPONDENCE.

Concerning Criticism of the Medical Department.

PARKERSBURG, W. VA., Sept. 20, 1898.

To the Editor:—Just now it seems to be the thing for every one to criticise everything pertaining to the conduct of the war; from the head of the War Department down all the ranks to the lowest officer in the field, all are under fire. Meantime it is refreshing to read plain and courageous articles—statements of facts, similar to that of Drs. Sutton, Senn and others who have served in the field and camp. A new generation has come up ignorant of the unavoidable conditions that pertain to war, who have forgotten the hardships, cruelties and sufferings of 1861-1865, and who have expected an army to be created, drilled and made efficient from raw material in rank and file, without mistakes; that large camps be established, veritable cities in size, and where the unsanitary conditions arising from the congregation of many men would be avoided by strict sanitary precautions being carried out by men taken from civil life, who were ignorant of the science of military sanitation; indeed, men who were ignorant of the rights accorded by military regulation to secure proper food, medicines and camp hygiene. In Dr. Dabney's letter in the JOURNAL of the 17th, we have the criticism of a sanitarian who is painfully ignorant of the situation he presumes to criticise. Let a city, if possible, spring up in the same time as one of these camps, fully supplied with sanitarians, and see whether it would be provided with a pure and adequate water supply! whether it would have an efficient administration for the disposal of garbage, of excreta, of sanitary cleanliness? Would these officers secure the co-operation of the inhabitants to avoid the use of impure water, unhealthy food, maintenance of personal hygiene? Certainly not! Sometimes in mining towns we see similar conditions, and we see similar results. It is not fair to compare the conditions in these camps with that in cities long established, with the organizations with years of experience behind them. As to the moving of hospital trains and its attending dangers, we had somewhat similar conditions in 1861-1865, yet there was no widespread dissemination of typhoid fever, camp diarrhea or dysentery throughout the country. As to typhoid fever, it prevails all over the country at this season. In a majority of cases there is little disinfection of excreta secured. From country, and towns on the banks of streams of all sizes, this excreta reaches the rivers from which towns and cities derive their water supply, and health authorities of all the States have not secured any abatement of the evil, by any means. They have not yet, as far as I know, secured such detention of such patients while their excreta is subjected to such examination as he proposes for our army confréres to carry out. Sanitary officers can direct that such and such procedures be carried out, just as the Surgeon General had done, and then fail to secure the performance. Let us have a little common sense with our fault finding. A summer campaign in Cuba meant sickness and death; summer camps for northern troops in the southern States meant the same. Our troops in these days have had easy times, save at Santiago, as compared with those in the days of 1861-1865, both blue and gray.

In conclusion, Dr. Dabney makes an invidious comparison between the medical men of the army and those of the Marine-Hospital Service, and proves it by the case of the marines at Guantanamo, their freedom from disease as compared with the troops at Santiago, due, he thinks, to the superior skill of the Marine-Hospital Service or surgeons. It is the first time we ever have heard that the U. S. Marines are a part of the Marine-Hospital Service and not attended by their own naval surgeons. We think the conditions are not at all the same. The medical men in the regiments were taken, in the case of volunteers, from civil life, appointed after examinations by boards chiefly appointed by the governors of the various States, and included many men who had served with the National Guard. If ignorant, it is the fault of the system. The volunteer surgeons appointed by the National Government included many who would adorn any position, either in military or civil service. Of course there have been mistakes, bad appointments, and carelessness, but nothing like to the extent the critics allege. May we profit by the experience and not be rushed into a war again before we are at least half way prepared for it. Least of all let us of the medical profession throw stones at those of our brethren who are at the head of medical service in the army. Respectfully,

W. H. SHARP, M.D.

Criticism of a Medical Directory.

MOUNT CLEMENS, MICH., Sept. 22, 1898.

To the Editor:—There has been a question coming up from time to time as to the reliability of the information published by R. L. Polk & Co., in their "Medical and Surgical Register of the United States." This question has been discussed *pro* and *con*, some claiming that it was reliable and others that it was not. It has come to the notice of physicians generally that the names of men were inserted as practicing physicians, whose evidences of having graduated were rather shady; but not until the present year have I known of any instance where they have sought to compel physicians to buy their publication by giving them a bad standing before the public if they did not. That seems to have been done in my case in the present edition without any other motive (further than that as treasurer of the Mount Clemens Sanitarium Co., they solicited an advertisement for two publications which they are getting out, namely: "The Medical and Surgical Record," and the "State Gazeteer," which I did not think, from a business standpoint, would be a paying investment). In the two former editions, 1893 and 1896, the name and standing of the college at which I graduated were correctly given; but in the present edition, the statement concerning me is as follows: "Alfred N. Shotwell, R. ¶," followed by a mark which indicates, "claims to have graduated, but the records do not show that a diploma was granted to any one bearing this name." The fact of my graduation has never been questioned before, and I refer you as to the untruth of their statement, to the faculty of the Detroit College of Medicine, where I was graduated Feb. 29, 1884; any member of it, or to any of the following societies: The Michigan Medical, the Northwestern, the AMERICAN MEDICAL, and the Pan-American. It would seem that it is about time for physicians to make a stand in this matter, as farther down in the registration of this town (if you will follow it), appear the names of two masseurs among the names of physicians. I know nothing whatever about the standing of these men, and it is foreign to the question, further than that they do not claim to be graduates of medicine, nor do they practice medicine in any shape or form. Is this a register and directory of physicians, or is it a directory published simply for the dollars and cents that these people can get out of it? I shall be glad to take this up with you and furnish you any other data that I can, and will furnish certificates from the officers and faculty of the college at which I graduated, which will substantiate the statement that this publication is unworthy of the medical profession, and should be sat down upon by all reputable physicians as unreliable and unworthy of their confidence.

If you will give this matter publicity through your journal in any way that you think proper, after a thorough investigation, I shall be very glad to have you do so.

Very sincerely yours,

A. N. SHOTWELL, M. D.

A Grave Menace to the Public Health: A Correction.

NEW YORK, Sept. 24, 1898.

To the Editor:—In your issue of September 17, p. 666, the statement is made in a letter signed by "T. S. Dabney, M.D.": "Eight hundred marines were camped for many weeks at Guantanamo and their health remained excellent, and why? Because the surgeons of the Marine-Hospital Service not only understand preventive medicine, but they *practice* it."

I beg to correct the inference that the United States Marine Corps is under the medical supervision of the Marine-Hospital Service. The latter organization was established for the care of sick and disabled sailors of the merchant service, a "mercantile marine," as it is sometimes termed, thus, doubtless occasioning the misunderstanding.

The United States Marine Corps is part of the United States Navy, and is cared for exclusively by the officers of the medical department of the United States Navy. The writer would have been strictly within bounds if he had applied to them the statement that "every man in that service is qualified for the work he is assigned." Not only in our home ports, but on foreign stations their success in preventing inroads of communicable disease is noteworthy and commendable. Furthermore, the officers, seamen and *marines* of the United States Navy are, first of all, cleanly in personal habits; second, obedient to orders and observant of sanitary requirements; and third, not given to whining (for *lactopeptin*, etc.) and complaining because of the hardships incident to the service, three essential conditions in time of war. Very respectfully,

ALBERT L. GIHON,
Medical Director, U. S. Navy (retired).

Gonangiectomy.

DUNNING, ILL., Sept. 22, 1898.

To the Editor:—In one of my recent articles published in the JOURNAL I used the word gonangiectomy, meaning by it an excision of a portion of the vas deferens. As it seems to be a new word, and since I have had a number of inquiries as to its root words or derivatives, I take this means of answering, and give first, the Greek, then the English equivalent, with diacritic markings for pronunciation; then the word as compounded, with its definition, "Lidell & Scott's Unabridged Greek-English Dictionary." The translation may not be absolutely literal:

γονή, gona: semen.
ἀγγεῖον, aggeion: a vessel.
ἐκτομή, ectoma: excision, or cutting away.

As compounded, gonangiectomy: excision of a vessel carrying semen. Very respectfully,

GEO. W. JOHNSON, M.D.

Secretary, Department of Health.

FAIRFIELD, IND., Sept. 24, 1898.

To the Editor:—Some of the papers of our land have had much to say of sanitary conditions, and made attacks upon the medical department, the truthfulness of which will be brought out or refuted by investigation.

Present reports from surgeons themselves prove the fact that they have done noble work, also that many embarrassing conditions arose not due to any lack of service upon their part, but because of limited authority, being handicapped by officers of other departments, and without medical knowledge.

All general orders must come from the Secretary of War and in such trying times it seems quite enough for him to give attention to other duties. In truth, this department should be directed by the Secretary of the Board of Health, who should a member of the cabinet and a physician. Let it be his duty to look after sanitary conditions, camps and boats, give general orders to surgeons, and see that this Department is equipped for efficient work, and care for the noble men, "our soldiers."

Not only is there a demand for this additional cabinet member during war, but he would fill a long-felt want in times of peace, and prove a valuable addition to the president's family.

Yours respectfully, THOMAS L. COOKSAY, M.D.

Instruments for Fen Cho Fu Hospital.

SIOUX CITY, IOWA, Sept. 19, 1898.

To the Editor:—Thanks are due to the JOURNAL as well as Dr. Webster of Chicago and Dr. Green of Dubuque, Iowa, for so soon as their gift of surgical instruments arrives at Fen Cho Fu Hospital, Dr. Atwood will no longer have to amputate limbs with a saw made of a piece of band iron. The appeal through the JOURNAL and the response by the doctors sends the instruments. Very respectfully,

MARY A. ATWOOD.

PUBLIC HEALTH.

Yellow Fever in the South.—In special dispatches in the *Chicago Daily Tribune*, September 26, four undoubted cases of yellow fever to date, with two deaths and one recovery, were reported from Jackson, Miss.: seven cases and one death from New Orleans, and ten cases from Oxford, Miss. There are no cases in Alabama and the quarantine is entirely in the hands of the State authorities. Refugees fleeing from Jackson are not permitted to stop within the State of Alabama.

Health in Michigan.—Reports to the State Board of Health for August give diarrhea, rheumatism, neuralgia, bronchitis, and cholera morbus as the five most prevalent diseases for the month. Compared with the preceding month, dysentery, cholera morbus, cholera infantum, typhoid fever, diarrhea and inflammation of kidney increased in area of prevalence.

Health in Chicago.—The report of the Department of Health for August gives the total number of deaths during the month as 1977, a rate of 1.22 per 1000 as compared with 1.21 per 1000 for the corresponding month in 1897, and 1.40 for August 1896. The principal causes of these deaths were: Diarrheal diseases, 261; other acute intestinal diseases, 231; diseases of the nervous system, 234; consumption, 184; heart diseases, 84; pneumonia, 78; cancer, 63; typhoid fever, 45; diphtheria and membranous croup, 41; bronchitis, 37. Those under one year of age numbered 595; those between 1 and 5 years, 251.

A Warning Against Antifebrin.—An inquest was recently held in London on the body of a young man who died from taking powders containing an indeterminate quantity of antifebrin. The powders were taken for the relief of headache. Antifebrin, like most analin derivatives, is a drug which should be employed with especial caution. It is official under the name of acetanilid, and its potency is sufficiently indicated by the fact that the maximum dose assigned to it is only three grains. There have been many cases of poisoning from the injudicious administration of this remedy, the symptoms produced by it being of the anilin type. The patient usually complains of giddiness, noises in the ears, throbbing in the temples, and a dull, heavy pain in the head. The face becomes livid, the lips are blue, and the pupils are contracted. This is followed by symptoms of collapse, the face and extremities are cyanosed, the skin is covered with cold, clammy perspiration, the pulse is feeble, and respiration becomes shallow and frequent. There is no specific antidote, and after the administration of a brisk emetic the sufferer should be kept in a strictly recumbent position, and plied vigorously with stimulants. The effects are usually of considerable duration, and in one case the patient was not out of danger for fourteen hours. We are informed that there is a considerable demand for powders of this description, the pur-

chasers being chiefly young women of a seamstress class. Many people acquire an unfortunate habit of dosing themselves with remedies of unknown composition, and this death under such sad circumstances may be taken as an indication that the custom is not one which can be indulged in with safety.—*Brit. Med. Jour.*

Requisites for a Tuberculosis Retreat.—The requisites for a sanitarium are as follows: 1, a well-arranged building with a southern aspect; 2, a dry, pure, well drained subsoil; 3, a pure atmosphere with abundance of sunlight; 4, a garden well protected from the wind; 5, sheltered verandas, galleries or arbors facing the sun; 6, constant supervision by specially trained medical men; and 7, an adequate nursing staff. High altitude is an advantage, but is not essential. As pointed out by Dr. Rufenacht Walters, all these conditions may be found on British soil; and there is no necessity for consumptive patients who can not conveniently leave home to go abroad in search of health. Three years' experience at Cromer has convinced Dr. Burton Fanning of the practicability and utility of the open-air treatment in England. He shows how the disadvantages arising from the capriciousness of our climate may to a great extent be obviated by a more elaborate provision of shelters and coverings than is required under brighter skies. There is some reason to believe that the climatic influences of foreign stations, though in themselves more favorable, may have disadvantages which make them ultimately less beneficial in the case of British patients than treatment in home sanatoria. Many leading German authorities hold that a cure effected in a more genial climate is less assured than one which has been obtained in the native country of the sufferer.—Malcolm Morris, in the *Practitioner*.

Practical Sanitation.—The Health Commissioner of Chicago has sent the following circular-letter to some 3500 or 4500 individual producers of milk for the Chicago market, throughout an area extending more than 120 miles from the city—the farthest point being Logansport, Ind., 123 miles distant:

DEPARTMENT OF HEALTH: CITY OF CHICAGO.

ARTHUR R. REYNOLDS, M.D., COMMISSIONER OF HEALTH.
SEPTEMBER, 1898.

To the Producers, Handlers and Shippers of Milk for Chicago:

The return to their homes of so many of our soldiers sick with or convalescent from typhoid fever has a special interest for milk producers, as well as for health authorities, at the present time. Hundreds, and probably thousands, of these sufferers are scattered throughout the area in which milk is produced and shipped to the Chicago market—on farms and in villages, small towns and other places, which drain directly into the streams that furnish the water-supplies of dairies and milch cows.

It is highly probable that many of these streams will be or already are polluted by the typhoid fever poison, and it is positively known that the disease may be conveyed in milk received and carried in vessels washed in such polluted water. One observer, the eminent sanitarian, Ernest Hart, has investigated 97 outbreaks of typhoid conveyed by milk, which caused upward of 5700 cases and 656 deaths.

The quality of the milk supply is of vital importance to Chicago. It has greatly improved during the last few years, and the deaths of infants and young children, for whom milk is the staple article of diet, have diminished in direct proportion to this improvement. A recent report of the Department shows a saving of 1530 children's lives last year compared with the average number prior to 1894, when the supervision of the milk supply was fully undertaken by the Department of Health.

In this supervision it has been the aim of the Commissioner to secure the co-operation of milk producers by showing that their interests are best promoted by improving the quality of their supplies. Such improvement and its effects have been repeatedly shown to the Chicago public by diagrams, tables and other matter furnished to the newspapers and published in them and in the Department reports. One result of this publicity is seen in the great increase in the milk shipments to the city. In 1896 the average daily receipts of milk by railroad amounted to 13,275 cans. Last year, 16,450 cans were received daily, or 48,034,000 gallons during the year. This is an increase of 9,271,000 gallons more in 1897 than in the previous year, or nearly 24 per cent. There has, of course, been no such increase in the population of the city, and the conclusion is, therefore, irresistible that mothers having been taught that the milk supply is of better quality, are feeding their children more generally and more liberally with this best of all food for the young.

This consideration, alone, would warrant the Commissioner in directing the attention of milk producers to the threatened danger of typhoid, and in asking their co-operation and assistance in preventing or restricting the evil as much as possible.

No producer can afford to have his milk infected with the typhoid poison. The methods of the Department are such as to make it certain that any outbreak of this disease in Chicago, caused by infected milk, will be located in the dairy from which the milk was shipped, and it would then, not only be the bounden duty of the Commissioner to prohibit the receipt and sale of such milk in this city, but the publicity which would surely be given to such prohibition would ruin the business reputation of the unfortunate producer.

All concerned in the production, handling and shipment of milk for the Chicago supply are, therefore, earnestly requested for their own interests, as well as for the interests of health and life in Chicago:

First, to keep posted as to typhoid fever in the vicinity of their places of business—especially with relation to the sources of their water-supplies.

Second, to notify the Chicago Health Department immediately on learning of any case of the fever in their respective neighborhoods.

On receipt of such information an inspector will be sent direct to the locality to ascertain the exact condition of affairs and the extent of the danger of milk infection, and to advise and assist in proper precautions.

No charge will be made for such inspection and assistance, but all the resources of the Department, its laboratory and its skilled experts, are freely offered to those to whom this circular-letter is addressed.

ARTHUR R. REYNOLDS, M.D.,
Commissioner of Health.

This is practical sanitation on a broad scale and the example is one which might very properly and profitably be followed by State boards of health and other sanitary authorities in warning against the probable spread of typhoid fever from the cause indicated and in instructing in known measures of precaution.

Sanitary Results Afforded by the Filtration Plant of Lawrence, Mass.—According to the *Public Health Journal*, the effect of the changes made in the water-supply of Lawrence, in 1893, was very promptly felt in an improved state of the health of the town. The work was completed on September 20, of the year named, at a cost of $65,000; and from that date up to the present time it has been in continuous use, and not once has the unfiltered water entered the reservoir or the service pipes of the city water-supply. It was the intention of the designer that the filter should be operated as an intermittent filter, that is, that the surface should be uncovered or free from water every day for a period of two or three hours, it being his opinion that better results would be obtained by this method of operation than could be obtained by operating it as a continuous filter; that is, one whose surface is never uncovered, except at times of scraping. The intermittent method of operating is followed during the summer, but in the winter the surface of the filter is seldom uncovered except at times of scraping. During the year 1894, the first entire year of operation, the bacterial efficiency of the filter was 98.46 per cent.; during 1895, it was 98.22 per cent.; and during 1896, it was 99.32 per cent. The efficiency of the filter in removing bacteria has always been greater in summer than in winter, the reason of this being that, contrary to the advice of the designer, the filter remains uncovered, and thus unprotected from the severe cold of the winter of the climate. In the January following the starting of the filter, the number of typhoid fever cases was nine, or one-eighth as many as during the previous January. This fact is more striking when we note that in Lowell during this month there were ninety nine cases, or three times as many as during the previous January. In January, 1895, there were ten cases

in Lawrence; in January, 1896, six cases; and in January, 1897, two cases. A more satisfactory demonstration of the effect of the filter upon the health of the people of Lawrence can be made, however, by stating that in 1887 the deaths from typhoid fever were 11.75 per 10,000 of the population; in 1888, 12; in 1889, 13.75; in 1890, 13.33; in 1891, 11.20; and in 1892, 11.11 per 10,000. During 1894 the filter was built, and hence during a portion of the year filtered water was being used. In 1894, however, filtered water was in use during the entire year, and the death rate from typhoid fever was 5 per 10,000; during 1895 it was 3.07; during 1896, 1.86; aud during 1897, 1.62 per 10,000. That is to say, the average death-rate for the six years previous to the construction of the filter was 12.36 per 10,000, while during the three years and ten months following its construction, it has been 2.95 per 10,000 of population, a reduction of 76 per cent. It can be said also, that a number of the deaths reported each year are operatives in the large mills who, in spite of the warning notices, drink the unfiltered and polluted canal water which is piped into these mills. In fact, it can be said that Lawrence now has one of the lowest death-rates from typhoid fever of any city in the State, and has its greatest number of cases during August, September, and October. The cases occurring in these months can not in any way be connected with the filtered water supply. Besides giving a water free from disease germs, the filter is giving a cleaner water, one more attractive and palatable, and containing but 50 per cent. of the organic matter of the river water.

The Use and Abuse of Food Preservatives.—Considerable contention has waged round the legality or desirability of employing preservatives in perishable articles of food and the subject naturally comes to the front during hot weather such as that which we have been experiencing for the past three weeks. There is little doubt that some means of preserving food are absolutely necessary when the prevailing conditions are such as to turn food in a few hours. Otherwise milk, cream, meat, etc., become unfit for consumption, unpalatable and evil-tasting. To keep the articles somewhat near freezing point is obviously impracticable on any large scale, while sterilization is similarly beyond application. This reduces our resources to the simplest of all expedients, the addition of an antiseptic in such quantity as to preserve, at any rate for a time, the articles from objectionable change and yet in minimum quantity so as not to constitute a possible harmful amount. We think the use in limited quantities of such mild antiseptics as borax to be justified at a time like the present when otherwise a considerable amount of valuable food substances would be wasted and lost. But, as we have urged before, the fact of an article being thus preserved against change should be always notified to the consumer, and we would have limits imposed by the State as to the amount of the preservative to be used; moreover, the nature of the preservative should also be declared. In other words, we would establish a system, recognized by the State, by which under certain circumstances the employment of preservatives with restrictions as to their nature and amount could be legalized. There has recently been made an important contribution on the subject by Professor Chittenden of Yale University. As the result of a series of very interesting experiments this physiologist reports that the results would appear to warrant the statement that in particular boric acid and borax when present in moderate quantities can have little or no deleterious effect upon the more important chemic processes of digestion. On the contrary it would appear that the presence of these agents may, in some cases at least, even accelerate the normal digestive processes of the alimentary tract. In regard to the effects of borax and boric acid on nutrition the same observer concludes that when borax is given in sufficient quantity to produce any effect its action is similar to that of common salt, i.e., it tends to increase proteid decomposition. Both borax and boric acid, he states, are without influence upon the putrefactive processes of the intestine, apparently because of their rapid absorption from the intestinal tract and quick elimination through the urine.—*Lancet, August 27.*

BOOK NOTICES.

Twentieth Century Practice. An International Encyclopedia of Modern Medical Science. By leading authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D., New York City. In Twenty Volumes. Volume xv, "Infectious Diseases." New York: William Wood and Company, 1898.

This volume continues the articles on infectious diseases. The contributors are Prof. Dittmar Finkler, M.D., of Bonn, who has contributed nearly one-half of the volume, 249 pages on influenza; Eduardo Licéaga, on typhus fever, 72 pages; Dr. S. Kissato Katsagawa, on Asiatic plague; Dr. Frank S. Billings, on glanders and anthrax; Ismar Boas, on foot and mouth disease; M. L. Ponfick, on actinomycosis; N. J. Keirle, on rabies; J. McFadden Gaston and J. McFadden Gaston, Jr., on pyemia and septicemia. These authorities have produced a series of essays truly representative of medicine at the close of the nineteenth century on the subjects treated, and it would be difficult to find authors who could write on the respective topics assigned them with better knowledge of the subject in hand. The history of influenza by Finkler is alone worth the price of the volume. He has made free use of that storehouse of epidemiology, Thomson's Annals, which very fairly covers the period from 1510 to 1837, especially in Great Britain, but we have here by Finkler an account of the preceding epidemics, the disease commencing, on the authority of Hirsh, in 1173. He has also brought his history down to the year 1894. The studies of Pfeiffer and Beck, Huber, Voget, Van Selow, Danco, Babes, Nastinkov and Max Richter are given in full.

Medical Diseases of Infancy and Childhood. By DAWSON WILLIAMS, M.D., Physician to the East London Hospital for Children. In one 12mo. volume of 629 pages, with 18 illustrations. Cloth, $2.50, net. Lea Brothers & Co., publishers, Philadelphia and New York.

The author has treated the subject from the broad standpoint of general medicine, but describes fully the special modifications and complications incident to infancy and childhood. The volume contains 47 chapters, viz: Introductory, clinical examination, diseases incidental to birth, food, acute specific infectious diseases (4 chapters), malarial fever, tuberculosis (4 chapters), syphilis, rheumatic fever, chronic rheumatic affections, infective arthritis, chorea, rickets, scurvy, anemia, leukemia, hemophilia, diseases of the thyroid and thymus glands, diseases of the heart, diseases of the mouth, diseases of the upper respiratory passages, acute bronchitis, bronchial pneumonia and pneumonia, pleurisy, chronic affections of the bronchial tubes, peritonitis, diseases of the liver, acute disorders of the gastro-intestinal system, intestinal obstruction, intestinal parasites, hydatid diseases of the genito-urinary system, diseases of the nervous system (8 chapters), diseases of the skin (2 chapters).

This is a carefully considered work, and will be extremely useful to students and others in keeping abreast of the literature of the time on this subject.

I. Raggi di Roentgen e lovo pratiche Applicazioni, Di ITALO TONTI. Milano: Manueli Hoepli. 1898.

II. La Cure Razionale dei Tisici e i Sanatorii. Del DOTTOR AUSORIO ZUBIANI. Milano: Manueli Hopeli. 1898.

These two little volumes from the Milan publishing house of Ulric Hoepli are in evidence of the demand of the Italian medical profession to be kept in touch with the latest results of scientific investigation. The first is a convenient, handy manual of actinoscopy that appears to be, though brief, tolerably full and up-to-date. It is profusely illustrated with skiagraphs that are reproduced in half-tone and which are very clear and intelligible.

The second volume is a discussion of the treatment of tuberculosis with special reference to the care in sanitariums and by the open air treatment, rather discarding the serum therapy methods that have been and are still somewhat in vogue. The

author makes a strong plea for the establishment of such sanitaria for the benefit of the poor.

Both works appear to be useful contributions to these special subjects.

Diseases of Women; A Manual of Gynecology. Designed expecially for the use of Students and General Practitioners. By FRANCIS H. DAVENPORT, M.D., Assistant Professor of Gynecology in the Medical Department of Harvard University, Boston. New (3d) revised and enlarged edition. In one handsome 12mo. volume of 387 pages, with 155 illustrations. Cloth, $1.75 net. Lea Brothers & Co., Philadelphia and New York.

This manual is not intended for specialists, yet specialists will find it interesting. All the important topics of gynecology are here discussed, and discussed intelligently. It comprises 20 chapters, viz., Introductory, anatomy, methods of examination, diseases of the vulva, diseases of the vagina, dislocations and lacerations of the vagina, displacements of the uterus, antreflexion of the uterus, inversion, inflammatory conditions, laceration, fibral myomata of the uterus, malignant diseases of the uterus, disorders of menstruation, disorders of the ovaries, tumors of the ovaries, diseases of the fallopian tubes, pelvic peritonitis, pelvic cellulitis, pelvic hematocele, diseases of the urinary organs.

As a recitation book for students, this work is extremely useful, and the practitioner will not go far wrong if he adds it to his library and is guided by it.

A Text-Book of Practical Therapeutics; With especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. With special chapters by Drs. G. E. DE SCHWEINITZ, EDWARD MARTIN and BARTON C. HIRST. New (seventh) edition. In one octavo volume of 770 pages; illustrated. Cloth, $3.75; leather, $4.50, net. Lea Brothers & Co., Philadelphia and New York.

This well-known text-book now appears annually, each year fresher and with the latest fruits of the medical literature of the period, succinctly classified and inserted in the revision. Few men have succeeded better than Dr. Hare in, first, ascertaining what is wanted by his colleagues, and, second, in supplying it with intelligence. The system of indexing and cross-references adopted makes the work very convenient. The work is masterly and authoritative.

The Essentials of Histology. By EDWARD A. SCHAFER, F. R. S., Professor of Physiology in University College, London. New (5th) edition. Revised and enlarged. Octavo, 450 pages, with illustrations. Cloth, $2.00 net. Lea Brothers & Co., publishers, Philadelphia and New York.

This book, as the former one, is divided into 46 lessons, and is intended as a recitation and practice book in the laboratory. The present edition contains 50 pages more than the former one, and is enriched by 67 additional engravings. Full instructions for the microscopic examination of tissues is given. The work is destined to maintain its popularity.

Elements of Histology. By E. KLEIN, M.D., F.R.S., Lecturer on General Anatomy and Physiology in the Medical School of St. Bartholomew's Hospital, London, and J. S. EDKINS, M.A., M.B., Joint Lecturer on and Demonstrator of Physiology in the Medical School of St. Bartholomew's Hospital, London. In one 12mo. volume of 506 pages, with 296 illustrations. Cloth, $2.00, net. Lea Brothers & Co., Philadelphia and New York.

This is a masterly guide to the science of histology, without which neither anatomy nor physiology can be properly comprehended. It is, as the preceding work, a treatise on microscopical technique, but, as its name indicates, is strictly confined to the subject of histology. The present issue is a thorough revision in every respect, and contains much additional matter. Although the work is very concise, compressed in 488 pages, it contains all the essentials upon the subject of normal histology. We commend the work to our readers, feeling sure they will not be disappointed in it.

A Clinical Manual of Skin Diseases, with Especial Reference to Diagnosis and Treatment. For the use of students and general practitioners. By W. A. HARDAWAY, A.M., M.D. Second edition, revised and enlarged, with 42 engravings and two plates, pp. 557. Philadelphia and New York: Lea Bros. & Co. 1898.

This book is divided into two parts, of which Part I contains introductory observations on symptomatology, causes of skin diseases, diagnosis, local distribution of skin diseases, treatment and classification; Part II, diseases of the skin proper, inflammations, hemorrhages, hypertrophies, atrophies, new growths, neurosis, diseases of the appendages of the skin, sweat glands, sebaceous glands, hair follicles, nails; parasitic diseases and animal parasitic infections. The work is well illustrated, and carefully written. As in the past, it will continue to be a favorite. We sincerely hope, however, that in the next edition the decimal system of dosage will be used in the prescriptions.

Examination of Sources of Public Water Supplies. Cloth, 258 pp. Maps. Cleveland: J. B. Savage Press, 1898.

This volume is a "Preliminary Report of an Investigation of Rivers and Deep Ground Waters of Ohio as Sources of Public Water supplies," made by the Ohio State Board of Health during 1897-98. It contains; "Report on Stream Pollution," by Allen Hazel; "Report on Chemic Examination of Waters of the Scioto, Olentangy and Mahoning Rivers," by N. W. Lord; "Report on Bacteriologic Examination of Waters of the Scioto," etc., by A. M. Bleile; "Report on Stream Gaugings and Sources of Pollution," by C. N. Brown; and a "Report on Rock Waters and Flowing Wells of Ohio," by Edward Orton.

A Treatise on the Science and Practice of Midwifery. By W. S. PLAYFAIR, M.D., LL.D., F.R.C.P., Emeritus Professor of Obstetric Medicine in King's College, London. Examiner in Midwifery to the Universities of Cambridge and London. Seventh American from the Ninth English Edition. In one very handsome octavo volume of 700 pages, with 207 engravings and 7 full page plates. Cloth, $3.75 net; leather, $4.75 net. Philadelphia and New York: Lea Brothers & Co., publishers.

This edition of Playfair gives evidences of complete revision, and it will doubtless remain, as heretofore, a favorite text-book with students and practitioners. The chapter on conception and generation has been re-written. A number of bacteriologic illustrations from Cruikshank have been added.

A Guide to the Clinical Examination and Treatment of Sick Children. By JOHN THOMPSON, M.D.. Extra Physician to the Royal Hospital for Sick Children, London, Lecturer on Diseases of Children, Edinburgh School of Medicine. In one crown octavo volume of 350 pages with 52 illustrations. Cloth, $1.75 net. Lea Brothers & Co., publishers, Philadelphia and New York.

The author has laid particular stress in this work upon clinical examination and methods of diagnosis, although the other essential features have not been omitted. The book is well written, and contains a fair résumé of the existing knowledge of the subject.

Transactions of the Indiana State Medical Society. Cloth, 537 pp. Indianapolis: 1898.

This volume comprises the transactions of the forty-ninth annual session of this Society, held in Lafayette, Ind., May 5 and 6, 1898. In addition to the usual data found in "Transactions," the following papers presented before the Society are printed: "President's Address," "Myths and Medicine," "Cerebral Centers for Pain," "Sudden Blindness," "Trachoma," "Optic Neuritis, Its Relation to Cerebral Disturbances, Toxicity, etc." "Some Points in the Etiology of Typhoid Fever," "Summary of a Report of 100 Cases of Typhoid," "Biology—Its Relations with Medicine as a Factor in Cosmology," "Symptoms, Diagnosis and Treatment of Appendicitis," "Gonorrheal Septicemia," "The Diagnosis of

the Different Diseases of the Liver," "Patent Medicines vs. Scientific Medicine," "Spinal Irritation," "Tuberculosis—Prevention and Treatment," "Constipation—Its Causes, Effects and Treatment," "Pneumonia," "Auto-intoxication," "Of What Value is Alcohol as a Medicine?" "Inflammation from a Surgical Point of View," "Chloroform and Ether Narcosis," "Sarcoma of the Kidney in Childhood," "Naso-pharyngitis—Its Causes and Treatment," "The Causation and Treatment of Hay Asthma," "The Mastoid Bone," "Criminal Abortion," "Monstrosity Triplets," "Teratology—Report of a Case," "Some Common Monstrosities," "Toil On, Keep Climbing," "Pus in the Female Pelvis," "The Radical Cure of Hernia," "Report of First Year's Work of Indiana State Board of Medical Examination and Registration," "Climato-therapy in Phthisis," "Oral Lesions of Syphilis in Relation to the Public Health," "What Shall We Do About Tuberculosis?" "Personal Observations in Diphtheria," "Excisions of Tonsils."

Transactions of the State Medical Society of Wisconsin. Vol. xxxii. Cloth, 583 pp. Madison: Tracy, Gibbs & Co., 1898.

The reports, papers, etc., in this volume were presented at the fifty-second annual session of the Society, 1898, the papers being grouped under the several headings: Materia Medica and Therapeutics; Surgery; Practice of Medicine; Neurology; Gynecology; Obstetrics; Pediatrics; Ophthalmology and Otology; Laryngology; State Medicine and Hygiene; Medico-legal. There are also obituaries of Drs. William Meacher, Francis H. Bodenius, Lucius M. Squire and George D. Wilber. The "Constitution and By-laws" occupy the latter part of the volume, with lists of members, present, honorary and deceased. The style of arrangement, the printing and the excellent paper used make this, the thirty-second volume of the "Transactions," a credit to the Society.

Transactions of the Ohio State Medical Society. Cloth. Illustrated. Pp. 556. Edited by P. MAXWELL FOSHAY, M.D., Cleveland, Ohio. Cleveland: J. B. Savage. 1898.

This volume has to do with the fifty-third annual meeting held at Columbus, Ohio, May 4 and 5, 1898, and in general appearance is uniform with former volumes. The full membership lists of the societies auxiliary to the State society, omitted last year, are included in the volume. The papers presented at the meeting are arranged under the following heads: Addresses, surgery, medicine, neurology, gynecology and obstetrics, ophthalmology, otology, laryngology and rhinology, rectal and genito-urinary surgery, forensic medicine and physiologic chemistry. The volume also includes the Constitution and By-laws, obituaries, etc.

Philippe Pinel of France: Science, Philosophy, Courage, Humanity, all in one person. Profound honor and gratitude from an American citizen. J. M. B. Easter, April 10, 1898. Rev. FRANCIS TIFFANY has prepared a memoir of Pinel, which is prefaced by an introduction by Dr. J. M. BARNARD of Milton, Mass.

The life story of the great Pinel, who struck the chains from the unfortunate at Salpètrière, is well shown. The frontispiece of this pamphlet is a photograph from the painting by Robert Fleury of Pinel's visit to the Salpètrière.

Transactions of the Medical and Chirurgical Faculty of the State of Maryland. Paper, 114 pp. Baltimore: The Deutsch Company, 1898.

This volume has to do with the one hundredth annual session, held at Baltimore, April, 1898; also the semi annual session held at Ocean City, September, 1897. The contents comprise: Officers, committees and delegates, minutes, president's address, "The Country Doctor"; annual address, "Epidemic Cerebro-spinal Meningitis"; reports; rules for the government of the library; lists of presidents, vice-presidents, active and honorary members.

Transactions of the Medical Association of Georgia. Cloth. Illustrated. Pp. 274. Published by the Association. Atlanta. 1898.

This volume has to do with the proceedings of the forty-ninth annual session, held at Cumberland Island, April 20, 1898. In addition to the usual matter found in "Transactions," it contains a number of charts, explanatory of the papers included in the "Transactions." The papers printed are up to the usual standard of excellence of papers of this Society.

SOCIETY NEWS.

Cincinnati Academy of Medicine.—At the opening meeting, September 19, Dr. Johnston exhibited a baby but a few weeks old afflicted with spina bifida and double clubfoot. The child had had an imperforate anus, which had been operated upon when the infant was about twelve hours old. No muscular tissue was found during the operation. The dissections were made entirely through cellular tissue, and the edges of the lower bowel, found opposite the sacral promontory, brought down and stitched to the skin. The result has been good, but undoubtedly the child will suffer from the loss of muscular tissue around the new rectum. The spina bifida occupies the lower dorsal region and does not contain the cord. The regular paper of the evening was read by Dr. J. A. Thompson, on "Nasal Headaches with Illustrative Cases." The causes reported with cases included hypertrophic rhinitis, atrophic rhinitis, either of the above complicated with nasal spur providing the spur presses upon the turbinated bone, deviated septum exerting the same pressure, syphilis including gumma, deep ulcer, and necrosis of the nasal bones, tuberculosis, tumors including polypi, fibroma and sarcomata, foreign bodies, rhinoliths, parasites, perforation of the septum, and granulomatous and purulent inflammations of the accessory cavities of the nose, including the ethmoidal and sphenoidal cells, the frontal sinus and the antrum of Highmore. The essayist also stated that very commonly two or more of these affections existed at the same time and that the symptom complained of, headache, would not in all probability be relieved unless the nose were rendered free and unobstructed. He likewise called attention to the frequency of complicating affections of the trachea, bronchi, larynx, pharynx and nasopharynx. He did not wish it to be understood that he thought all headaches, or even a very large proportion of them, were due to pathologic conditions in the nose. He did think, however, that headaches accompanied by the symptoms of nasal obstruction, where direct examination showed such obstruction to exist, were in nearly all cases relieved by removing the pathologic conditions existing in the nose. Discussed by Drs. S. E. Allen, Vale, Tangeman, and the essayist.

Wayne County Medical Society.—At the regular meeting of this society, Detroit, Mich., September 22, Dr. W. E. Scriber read a paper on "Ten Typical Cases of Typhoid Fever Treated Successfully Without Medicine." The Doctor said he did not feel that he was offering anything new, as he believed the trend of the profession is toward little or no medicine in the treatment of this disease. He stated that he had tried the various remedies for typhoid fever in a series of 500 cases with little or no beneficial effect, and in many cases the opposite of what he desired. Turpentin and quinin he had entirely discarded as not only worthless but harmful. He now confines himself to the use of but four remedies in complicated cases. These are cold, heat, water and diet. For the moral effect, and to satisfy the friends of the patient a little colored water or powdered chalk is used. Diarrhea, he said, may be controlled, and in most cases arrested, by keeping the patient on a small or restricted diet, or entire fasting for a few hours. Then milk whey may be given if any food is required. During fasting

cracked ice is beneficial, as it allays vomiting and replenishes the secretions of the body. Hemorrhage is met in the same way. He said that patients fed on milk had not done well in his hands, as they are more liable to hemorrhage, diarrhea, vomiting and other unpleasant symptoms. Constipation, he has found, could be relieved by giving plenty of cold water, if necessary, enemas of pure water. The temperature he controls by means of ice compresses applied to the abdomen and back of the neck, the amount of ice used being directly in proportion to the height of fever. The Doctor illustrated the success of his treatment by enumerating and giving the histories of ten cases of typnoid fever treated by the method laid down. In all cases recovery and convalescence were prompt and rapid.

Southern Surgical and Gynecological Association.—The approaching meeting of this Association will be held in Memphis, Tenn., November 8, 9 and 10. Papers have been promised by many of the leading surgeons and gynecologists of the country, especially of the South. Members of the medical profession are earnestly invited to attend. William E. B. Davis, M.D., Secretary.

NECROLOGY.

CHARLES D. SHIRMER, M.D., College of Physicians and Surgeons, New York, 1889, died September 15. He was a New York City practitioner.

JOHN D. KNIEF, M.D., Bellevue Hospital Medical College, New York, 1887, died at Liberty, N. Y., September 8. His home was in New York City.

JOSEPH KUFNER, M.D., Bellevue Hospital Medical College, New York, 1882, aged 60 years, died in New York City September 14. He was born in Germany and studied at Vienna and Munich before his arrival in America, thirty-five years ago.

PHILIP ARTHUR MALLESON, M.D., College of Physicians and Surgeons, New York, died at his home in New York City September 19. He was born Dec. 25, 1859, at Glens Falls, N. Y., and at the time of his death was president of the Harlem Medical Association. Besides being a member of many organizations he was well known for his well-directed charities.

GEORGE TROWBRIDGE, M.D., died at his home in New York City, September 10. He was a son of Amos H. Trowbridge, president of the Second National Bank, who died in 1881 possessed of considerable wealth. Dr. Trowbridge was graduated from Yale in 1878, and three years later received his diploma from the College of Physicians and Surgeons, New York, but retired from practice fully ten years ago.

ABRAHAM M. OWEN, M.D., Bellevue Medical Hospital College, New York, 1870, of Evansville Ind., died September 19. He was born in Madisonville, Ky., and early became a member of the AMERICAN MEDICAL ASSOCIATION. As one of the organizers of the Pan-American Medical Congress and an active promoter of the Mississippi Valley Medical Society he will be recalled by many friends. He was a man of great energy, uncommon industry and a most genial companion.

T. S. BELL, M.D., Wapell, Iowa, September 16, aged 70 years.——R. H. Bush, M.D., Huntsville, Texas, September 13.——F. Caspar, M.D., Warren, Ohio, September 19, aged 82 years.——Harry Chase, M.D., Ferron, Utah, September 15, aged 28 years.——Noah T. Clarke, M.D., Canandaigua, N. Y., September 16, aged 81 years.——Henry O. Claus, M.D., New York City, September 19, aged 72 years.——A. M. Cooper, M.D., Point Pleasant, Pa., September 15, aged 68 years.——Louis T. Gruel, M.D., Philadelphia, September 19, aged 28 years.——G. W. Holcomb, M.D., Clinton, Mo.——J. S. McCain, M.D., Lexington, Miss., September 8, aged 70 years.——Albert F. Schafer, M.D., South Bend, Ind., September 17, aged 35 years.——C. I. Walker, M.D., Powers, Mich., September 11, aged 35 years.——F. D. Wheelwright, M.D., Washington, D. C., September 12, aged 81 years.

MISCELLANY.

New Publication.—A new quarterly, *The Psychiater*, $2 a year, has been launched at Hospital, Ill., to contain reports of the scientific work at the Illinois Eastern Hospital for the Insane.

Melancholia in Lepers of Iceland.—Dr. Ashmead has received the following from Dr. Jonassen, dated at Reykjavik, Sept. 3, 1898: I thank you kindly for the reprint about "The Leprosy Question." As to the melancholia in a leper, I shall remark that about all lepers (when the malady is advanced) are under depression of mind, and I am sure that several cases of melancholia in lepers exist in Iceland.

Phlebitis of the Leg in Pneumonia.—Da Costa (*Phila. Med. Jour.*, September 10) reports two cases of this rare complication. The treatment is the same as for this condition in typhoid fever; rest in bed and elevation of the limb; fomentations to reduce the pain and swelling; laxatives to prevent engorgement of the venous system; and close attention to the heart. The patient should be carefully guarded from getting up too soon, and allowed to walk only short distances at first.

Historic Research in Maryland.—The "Medical Annals of Baltimore," which were edited by the late Dr. John R. Quinan in 1884, are to be revised by Dr. Eugene F. Cordell, who has been appointed by the medical and chirurgical faculty to bring the work up to date and issue it as a centennial volume of the faculty in 1900. This is a matter in which all the medical sons of Baltimore, in all parts of the country, can take interest, and many can give their help.

More High Balloon Flights.—European scientific papers publish interesting accounts of the fifth series of international balloon ascents made in June last. Balloons, some manned and some unmanned, ascended simultaneously from various parts of Europe, extending from Paris to St. Petersburg, and as far south as Rome. An unmanned balloon which started from Paris and dropped in Westphalia, reached a height of about ten miles and recorded a minimum temperature of 83 degrees below zero. A balloon carrying Dr. Berson, from Berlin, attained an elevation of about 18,000 feet, more than 2000 feet higher than the summit of Mont Blanc. The lowest temperature that he experienced was between 10 and 11 degrees below zero.

Heroism of an Army Surgeon in India.—The following case of an army surgeon's heroism has attracted attention: In a recent action on the Indian frontier an officer was wounded in the shoulder by a bullet, and was bleeding to death, the main artery being cut. Surgeon-Lieutenant Hugo came to his aid. The fire was too hot to admit lights to be used to examine the wound, and there was no cover; nevertheless Lieutenant Hugo struck a match and examined the wound. The match went out; the fire which had been drawn kicked up the dust all around. Having no ligature, he remained three hours holding the vessel, under fire the whole time, then picked up the officer, still holding the artery with his thumb and finger, and carried him to a place of safety.

Roborant Properties of Spinach.—Prominent specialists claim that spinach is the most precious of vegetables, on account of its medicinal and strengthening properties. The emollient and laxative virtues of spinach, owing probably to the salts of potash it contains, have been long known. It is excellent for the liver and as a consequence freshens the complexion. Some vegetables contain a relatively large dose of iron. According to Boussingault, the proportion is 0.00074 of iron in 100 parts of French beans, 0.0083 in 100 parts of lentils, and spinach very much more. The chemist, Bunge, has proved that spinach and yolk of egg are proportionately richer in digestible iron than all the most renowned ferruginous remedies. Its great value and growing importance is shown in the fact that

spinach is already an active ingredient in several new and very salable tonics.—*Public Health Journal.*

Thyroid in Bleeding Fibroids.—In the *Medical News* for September 17, Moseley reports the results in five cases and draws the following conclusions: 1. That while some patients can take comparatively large doses of thyroid with impunity, others are injuriously affected by small amounts. One should therefore begin with minimum doses, i. e., three grains daily, increasing the amount slowly, watching its effect on the kidneys and heart. 2. Thyroid has a marked influence in bleeding fibroids, in checking excessive loss of blood, and in some cases is followed by a diminution in the size of the growth. 3. In appropriate doses, improvement to the general health results, probably due to the cessation of excessive loss of blood.

Intravenous Saline Injections.—Boise (*Med. News*, September 10) advocates the intravenous route in postoperative saline injections, as, 1, with proper technic, there is no more danger than by any other route; 2, it supplies fluid to the system most quickly and most certainly; 3, it brings heat directly to the cardiac and arterial ganglia; 4, by this method the stimulating effect of the saline solution on the heart muscle is more immediate and more pronounced. He believes the solution should be as hot as can safely be borne, i. e., 115 to 118 degrees, and whether the post operative condition of the organs be one of depression or excitation, the heat thus supplied will be beneficial. In acute anemia, raising the temperature of the fluid circulating throughout the system will aid in re-establishing physiologic conditions.

What Did the Rector Mean?—For the sake of the rector, who is young and artless, let his name be unknown. But the story is true and it occurred last week, and each woman is busy with its narration. There is an organization in the church; what its uses are only the members know, but it is called "The Little Mothers of the Church." Now, this rector was giving out a notice about it the other Sunday, and how a woman could join it, etc. And then he made this announcement, which created a flutter and a gasp: "Any lady wishing to become a Little Mother can do so by calling on the rector any Friday in his study attached to the church." And a murmuring wave, like a sudden wind in the forest, went over that congregation.—*San Francisco News Letter; Pacific Med. Journal*, September.

Trauma as a Cause of Appendicitis.—In a paper on this subject (*Medical Record*, September 10), Small concludes: 1. That general prevalence of catarrhal conditions of the bowels, perhaps as an accompaniment or result of the grippe, is responsible for a large part of the general increase in prevalence of appendicitis. 2. That accidental injuries, strains, and work demanding strong contraction of the abdominal muscles may be held accountable for the greater prevalence of the disease in males. 3. That such injuries and strains act by forcing material, loaded with the bacteria which produce appendicitis, from the cecum into the vermiform appendix. 4. That in consequence of the irritation of such material, or from some other cause, these germs here find a favorable soil for their multiplication and development. 5. That in common with other germ diseases a time of incubation must elapse (for the multiplication of these germs) before symptoms sufficiently marked to prove characteristic of appendicitis can appear. 6. That the disease is of growing medico-legal importance, as many cases are of traumatic origin, and may therefore give rise to proper suits for damage or valid claims against accident insurance companies.

Service of Writs Upon the Insane.—In the chancery practice in England, process mst be served on an infant before a guardian *ad litem* can be appointed; and this is said to be the general practice in suits against an idiot or lunatic who has been found to be of unsound mind by inquisition. Substituted service upon the keeper of an asylum where a lunatic is confined has there been allowed, in equity, when service would be injurious to him. In some of the States, service upon a committee or upon a guardian has been held sufficient. But as the statutes of Massachusetts concerning the service of writs and subpenas contain no special provisions for service upon infants, or persons under guardianship or of unsound mind, the practice in that State seems to have been to require the same service upon them as upon other defendants. And the supreme judicial court of that State says, in the case of Taylor vs. Lovering, that it thinks this is the proper practice, because, although service on an infant or a person of unsound mind sometimes would seem to be useless, it often would be difficult to determine whether in fact it would be so or not.

Injured Employe Assumes Risk.—By retaining a portion of the monthly wages of each employe for medical services, the court of civil appeals of Texas holds, in the recent case of the Southern Pacific Company vs. Mauldin, the company obligated itself to furnish such services as were practicable and reasonable to each of its employes when sick or injured. But this duty, the court says, as it understands the evidence here, was to be discharged, when practicable, by treatment of the patients in the hospital at a certain point, the patients being taken there gratuitously by the company. And this being the case, the court considers it immaterial whether a patient could be properly and successfully treated at another place. When the company furnished there such treatment as the emergency demanded and was necessary to prepare the patient for transportation to the hospital, by the servants of the company calling to the patient a physician of good reputation residing in the vicinity of the accident, and the patient declined the offer of the company to take him to the hospital, declaring that he was satisfied with the treatment of the local physician, and preferred to remain with him, the court holds that the duty of the company as to the patient was ended, and that he could not recover damages for the mistake of the surgeon to whose care he was temporarily committed, in treating him for spraining and laceration of the muscles, instead of for a dislocated hip.

Cannot Disclose Incidental Discoveries.—In the personal injury case of Nelson vs. the Village of Oneida, the plaintiff claimed to have suffered an umbilical hernia, a prolapsus of the uterus, and several bruises, by a fall due to a defective sidewalk. But the defendant attempted to show by her physician that she had an umbilical hernia before the accident. Its counsel insisted that if the physician discovered the umbilical hernia while attending his patient at childbirth, but did not treat her for it, and the knowledge was not necessary for his guidance in assisting in the delivery of a child, he could disclose it, while the court took the position that the very nature of his employment compelled the disclosure to him by the patient, and, therefore, it was privileged under the statute. The latter provides: "A person, duly authorized to practice physic or surgery, shall not be allowed to disclose any information which he acquired in attending a patient, in a professional capacity, and which was necessary to enable him to act in that capacity." Appeal was taken to the court of appeals of New York, and this tribunal now affirms the judgment of the court below, holding that the evidence offered was clearly within the protection of the statute, because the witness acquired the information which the defendant desired to elicit from him while attending the patient in a professional capacity, and the discovery of an umbilical hernia was a necessary incident of the investigations made to enable him to act in that capacity.

Insurance in its Earliest Stages.—We can discover no earlier recorded instance of insurance against accidents than that mentioned by Livy. During the Second Punic War the contractors for delivering corn into Spain stipulated that the Gov-

ernment should indemify them against loss by tempest. Cicero, too, after his victory in Cilicia, seems to have obtained security against the loss of his booty during its transit to Rome. These instances, however, have not been regarded as genuine cases of insurance by those authorities who assert that only after the revival of commerce in the tenth century did it come into vogue. If this be correct, the first mention of insurance is the establishment in 1310, at Bruges, at the request of the inhabitants, of a chamber of assurance. "The contract of reciprocal insurance was known likewise in Portugal in the fourteenth century, and in the fifteenth, Sept. 10, 1436, King Edward of Portugal writes from Lisbon that the merchant vessels of the English, which had been chartered for the Tangiers expedition, had not been insured owing to the fault of their proprieters; while those of the Portuguese, even of the Royal Navy, were." It is probable, however, that insurance came into use in Italy early in the twelfth century, and was, by the Lombards, transplanted into those countries with which they had commercial dealings. To them, therefore, the invention of insurance, as it is now understood, is generally conceded.—*Pearson's Weekly.*

Statistics of Cutaneous Diseases.—In his presidential address before the recent meeting of the American Dermatological Association (*Jour. of Cut. and Gen.-Urin. Dis.*, September), Hyde made a comparison as to cutaneous disorders in this country and abroad, taking as a basis, 500 cases occurring in men, women and children, in the out-patient service of public clinics in each of the cities of Paris, New York, Boston and Chicago. The figures show a decidedly greater variation in the character of the tabulated disorders in America. In the 500 cases in New York, 58 different dermatoses were noted; in the 500 in Boston, 54; in Chicago, 48; in Paris, 46. Again, the list of rare disorders tabulated in Paris were less than in each group of 500 cases in the American cities. Of the 500 Paris cases, 114 represented the victims of syphilis, as compared with 46 in the Boston group, 33 in the New York and 170 in Chicago. Chicago patients gave more than four times as many male as females. In New York the sexes were equally divided, and in Paris more than half the patients were women. Paris reported nearly double the number of American cases of alopecia areata; Chicago the larger number of cases of lupus erythematosus and of lichen planus, with a case of pityriasis rubra pilaris. New York excelled in lupus vulgaris, sebaceous-gland affections, seborrhoic eczema, and psoriasis, while more than half of the forty-five cases of pruritus were from Chicago. Dr. Hyde believes that "the results of this comparison, even though made on a limited scale, are sufficient to indicate clearly that the clinical field for the study of dermatology in our country is in a high degree satisfactory, and that with increased laboratory facilities the day is not distant when American students will no longer deem it requisite to pursue a course of foreign study in order to perfect themselves in this branch of medicine."

Growth of Ether Anesthetization in England.—Dr. Frederick W. Hewitt, anesthetist to the London Hospital, reports that chloroform was administered in only 677 cases out of the 6,657 cases anesthetized at that institution during 1897. He further says that several years ago this anesthetic was in routine use; but experience has tended to somewhat shake our confidence in it for general employment. When such a report is made, coming as it does from a large and important hospital, it seems very significant. A better example of medical conservatism can not, perhaps, be found than in the use of the two great anesthetics. For a long time it has been very evident that ether is the generally safer anesthetic; but convenience, the fact that chloroform is pleasanter to administer and less disagreeable in its after-effects, and, above all, habit, seemed for years to blind the eyes of our English brethren to that most important consideration, the greater danger to human life. What though the danger be but slightly greater, is any man justified in risking his patient's life? The gradual change in favor of ether is coming, not alone in England, but on the continent of Europe. In several of the large German and French clinics ether is the usual anesthetic, and in spite of the shockingly large chloroform fatalities annually reported in the *British Medical Journal* and in the London *Lancet*, we believe that there is greater need of this change on the continent; for what American who has visited the clinics of Europe has not been amazed and disgusted at the careless administration of chloroform in some of the most celebrated clinics? It should in justice be stated that there has been in certain parts of our country almost as much prejudice against chloroform as has been shown in favor of it on the other side of the Atlantic. At present it is generally recognized, however, even in Boston, that although ether is the anesthetic to be chosen in the vast majority of cases, chloroform is very definitely indicated under certain conditions and this, we believe, is the proper solution of the matter.—*Philadelphia Medical Journal.*

Scope of Personal Injury Liability.—When a person is injured through the negligence of another, he must use due diligence to obtain proper medical treatment, though the supreme judicial court of Massachusetts says that his duty in this respect is fully discharged by using ordinary care in procuring a reputable physician, and the same care in following his instructions. That the treatment which he obtains is improper will not release the defendant from liability for negligently causing his injury. Nor will the fact that certain medical witnesses testify that blood poisoning is not an ordinary incident, if wounds are dressed in a specified manner, authorize an instruction that the defendant will not be liable for blood poisoning, unless it is the ordinary effect of such a wound, especially so long as there is no evidence that blood poisoning is not a natural result of such an injury as that which the plaintiff received, and no evidence that the wounds which were inflicted on him were not skillfully and properly treated, and so nothing to call for an instruction to be separately given with reference to disabilities resulting from improper treatment. On the other hand, the court holds correct (McGarrahan vs. the New York, New Haven & Hartford Railroad Company) an instruction that if the plaintiff, in the selection of the physician or surgeon, and in compliance with his directions, was in the exercise of reasonable care, the defendant was still responsible in damages for the results of the injury, although those results were more serious than if he had had better treatment. Evidence that one, who practices as a physician and surgeon, attends a patient and gives him professional assistance, the court further holds, justifies a finding that the services were rendered for a pecuniary recompense, to be paid by the patient. And evidence that a sick person is kept and cared for at a private house, other than his home, the court likewise maintains, justifies a finding that he is there upon expense.

Dangers of the Nasal Douche.—Lichtwitz deprecates the routine prescription of the nasal douche in all cases of hypersecretion of the nasal mucous membrane. Irrigation is called for only when the nasal fossa require clearing of pus and crusts, for instance in idiopathic ozena. This affection is mainly limited to the nasal fossa properly so called, and irrigation is in such a case the most fitting form of procedure. An ordinary syringe or enema syringe with suitable nozzle should be used. In all other nasal affections irrigation is inadequate or useless; it is even dangerous. Repeated flooding of the mucous membrane may give rise to olfactory lesions. Antiseptics are highly injurious and pure water is badly borne; the physiologic solutions of sodium chlorid, sodium bicarbonate or sodium sulph. are the only harmless liquids. In numerous cases irrigation

has caused the sense of smell to be temporarily or permanently diminished or lost. Distressing frontal or occipital headache may result, owing to the liquid passing into the sinuses. The injection of irritating liquids may even set up inflammation of these cavities. The most skillful and careful irrigation is insufficient in many cases to prevent the resulting headache. A very grave complication is the penetration of the liquid into the middle ear, suppurating otitis media occasionally supervening. In acute coryza, especially in children, douching should never be practiced. In one such case known to the author mastoiditis followed irrigation of the nasal cavities. The predisposition to otitis is increased after retronasal operations, in particular after ablation of adenoid vegetations. For eight years the author has given up all irrigation after pharyngo-tonsillotomy, and during that period has met with no case of post-operative complication.—*British Medical Journal.*

Conductors Can Employ Surgeons in Emergencies.—It is a mooted question whether or not a railroad company is responsible in any case for the contracts of an employe, not made in the line of his employment, and he having no express authority to make them, and, if so, under what state of circumstances this liability attaches to it. However, the supreme court of Arkansas suggests that the weight of authority seems to sustain the doctrine that, in case of an emergency, the employment (of a physician, for instance) by the highest railroad official present is the act of the company, and it will be liable for the value of the services rendered to one, in the employ of the company, injured by the running of its trains. It says that it may be that it is the legal as well as the moral duty of the company, when an accident happens to a person in its employ, to do all it can to prevent an injury to its servants from having its worst consequences, just as it is its duty to do all it can to prevent the injury in the first instance when informed that the danger is impending. But whatever may be the reason, it is a case in which some one should act, and without delay; and the equities are in the idea that the employer is under a greater obligation to do so than any one else, not otherwise bound. Yet the liabilities should not be extended beyond the exigencies of the occasion, and the extraordinary rule should be most strictly construed, and applied with the greatest caution, and all conditions upon which it is based should appear in every case when it is applied. Upon these considerations, the court affirms a judgment in favor of the physician, in the appealed case of the Arkansas Southern Railway Company vs. Loughridge, it being of the opinion that the emergency under which the conductor acted in requesting the physician to go and see the injured man (meaning to attend him), a brakeman, was such as to make the act binding upon the company, the charge being reaasonble.

Right to Compensation for Attending Paupers.—The supreme court of Iowa holds, in the recent case of Lacy vs. Kossuth County, that by appointment under the provision of law that each local board of health shall appoint a competent physician who shall be the health officer within its jurisdiction, the appointee becomes simply an officer to assist in the administration of the law and the enforcement of the regulations of the board, and, as such, he is not required to treat the sick in his professional capacity, and he can not be compelled to render assistance to infected persons, simply because he was appointed physician to the board. But whatever the board deems best for the safety of the inhabitants, in the matter of assistance and supplies, they may order under the provisions of the Acts of XXII General Assembly; and compensation for such service is to be had under the provisions of that enactment. Therefore, as the plaintiff in this case was called to the service by the board of health to treat an infected person, the court holds that he was entitled to his compensation, although the county may have had a contract with a physician by which such physician undertook to treat all the paupers of the county. The fact that the patient in question was a pauper, it adds, was material to the inquiry as to who should pay the bill, and not as to who should perform the service. It also holds that there was properly attached to the plaintiff's statement of account a certificate of the board of health that he was employed by it, that he performed the services stated, and that the bill was correct, etc., which certificate became a part of the claim and, as such, was admissible in evidence, though a portion of it referring to the responsibility of the father and to the contract price of the work was rejected. On the other hand, the court holds that in an action brought to recover for medical services rendered a poor person, under employment by the township trustees, if the board of supervisors had in fact employed a competent and convenient physician to care for the poor, the trustees were not authorized to employ another simply because they believed the county physician was inattentive, negligent, or incompetent, and that the county would not be liable.

Old License but Prima Facie Evidence of Right to New One.—The provisions of Section 5 of the Indiana law regulating the practice of medicine, approved March 8, 1897, the supreme court of that State says, materially modify the provisions of Section 2, which, taken alone, would make the possession of a license under the old law the only evidence needed to entitle a person to one under this new law. It insists that Section 5 authorizes the State Board of Medical Registration and Examination to do something more than merely inspect the old license before they issue the certificate for a new one, and that, under its sweeping provisions, the old license is merely prima facie evidence of a right to the new one. The Board, in effect, the court holds, in the case of State ex rel. Burroughs vs. Webster, June, 1898, is given authority to inquire whether the license was rightfully obtained; and even then, if the applicant is an unfit person to practice medicine, by reason of criminal conduct or immoral character or habits, the Board may refuse a certificate. Moreover, after the giving of a certificate, provided no license has been issued upon it, the court further suggests, the Board may after notice and hearing, revoke the same, though they can revoke a license, once granted, under the new law only upon the finding and judgment of the circuit court. Whether the law is a wise one, is declared to be not for the courts, but for the legislature to say; and the legislature having judged that the safety of public health required the guards that are placed around the practice of medicine by this law, the supreme court says that it is unable to see that the act is not a valid exercise of the police power of the State; and it maintains that the statute itself is notice that the legislature has set aside the old licenses and given a reasonable time in which to apply for new licenses in their place, and, the applicant for a new license having presented himself before the Board, he must be held to have notice of whatever disposition the Board may make of his application. Another point decided, is, that that while in some respects quasi-judicial, the action of the Board is not judicial any more than is the action of a county surveyor in fixing a boundary line or of a county superintendent in giving or refusing a teacher's certificate, or the action of numberless other officers and boards in making investigations and decisions in matters committed to them. Neither is the circumstance that an appeal is allowed from a decision of the Board deemed an indication that its action is judicial.

Death From Insect Stings.—According to the *Lancet* of August 27, a fatality from this cause has been reported in the case of a laborer who placed in his mouth a gooseberry which proved to contain a wasp. The wasp stung him at the "root of the tongue; he went into his cottage, and medical aid was summoned, but death ensued in five minutes." In this instance

death most probably supervened on suffocation, due to intense swelling in the throat and was not due to poison itself. Vomiting, fainting, delirium and stupor strongly suggest a highly virulent substance of the nature of a toxin. The precise nature of the poison of wasps and bees is not known. They possess a poison bag and sting, and the fluid secreted is as clear as water, exhibits an acid reaction and, in fact, contains formic acid. But this acid can hardly account for the severity of the symptoms sometimes following a sting. Fatal results have indeed occurred, which could only be attributed directly to the toxic action of the sting. One of the old-fashioned remedies, and we believe a good one, is to apply immediately to the part stung the juice of a raw onion. The rationale of this remedy is not clear, the sulphur oil in the onion possibly serving as a palliative. The sting, at any rate, if it remains in the wound, should be extracted and the puncture dressed with a little weak ammonia, and afterward a little bromid of ammonia may be added, which frequently serves as a sedative. Judging from the great number of wasps which have somewhat suddenly appeared in the rural parts of England, during the recent hot weather, this seasonal pest promises to be of no small dimensions. The intense irritation caused in some persons by mosquito "bites" may be properly relieved by the application of ipecacuanha, either the "vinum" or the powdered root, made into a paste with either water or vinegar. Spirits of camphor will allay the itching of mosquito bites, and aqua-ammonia is supposed to be a direct antidote to the poison of the common insect pests.

Societies.

The following recent meetings are noted:

California.—Pasadena Medical Association, September 10.
Illinois.—Society of Internal Medicine, Chicago, September 10.
Iowa.—Fremont County Medical Society, Randolph, September 14; Medical Society of the Missouri Valley, Council Bluffs, September 14.
Maryland.—George's Creek Medical Association, Frostburg, September 15.
Massachusetts.—Worcester District Medical Society, Worcester, September 14.
Missouri.—St. Louis Medical Society of Missouri, September 24.
New York.—Academy of Medicine, Syracuse, September 20; Alleghany County Medical Society, September 14; Orange County Medical Society, Newburgh, September 13.
Ohio.—Lucas County Medical Society, Toledo, September 16.
Pennsylvania.—Cecil County Medical Society, Elkton, September 15; Lancaster City and County Medical Society, September 7; Lebanon County Medical Society, Lebanon, September 13; Lycoming County Medical Society, Williamsport, September 9.
Tennessee.—White County Medical Society, Sparta, September 9.
Texas.—Briggs Medical Society, Waxahachie, September 13.
Vermont.—Connecticut River Valley Medical Association, Bellows Falls, September 20.

Cincinnati.

Dr. S. P. KRAMER, newly appointed brigade surgeon with the rank of major, is on duty at Montauk Point.

Dr. CHARLES H. CASTLE, surgeon First Ohio Cavalry, is still fighting typhoid fever at Fernandina, Fla.

Drs. H. P. DIEKMEIER and E. B. Palmer, former internes of the Cincinnati Hospital, have returned from a prolonged course of study in Europe.

Detroit.

DETROIT MEDICAL AND LIBRARY ASSOCIATION.—At the regular meeting September 19, Dr. G. E. McKean read a paper on "Tubercular Meningitis." After reviewing the literature on the subject and giving the pathology, diagnosis and treatment, the Doctor recited the complete histories of three cases occurring in his own practice. One of these cases, a child of 8 years, recovered and has since been in good health. One other case was that of a young lady 25 years old, but the tubercular deposits in the brain, causing the fatal sickness, were secondary.

HEALTH REPORT FOR WEEK ENDING SEPTEMBER 24.—Deaths 99; under 5 years 43. Births, male 30; female 32. Contagious diseases; Diphtheria, last report 5 cases, 6 new cases reported, 5 recoveries, 1 death, 5 remaining; scarlet fever, 2 new cases, 4 recoveries, no death, 4 now sick; 1 case of smallpox reported, 2 now sick.

Washington.

HEALTH OF THE DISTRICT.—The report of the Health Officer for the week ended September 17, shows the total number of deaths to have been 125, of which 64 were white and 61 colored. Among the principal causes of death were: Nervous diseases, 25; genito-urinary, 10; consumption, 15; circulatory, 11; there were 3 deaths from diphtheria, one from whooping-cough and 3 from typhoid fever: there were 68 cases of diphtheria and 45 cases of scarlet fever under treatment at the close of the week. In the annual report of the Health Officer recently submitted to the Commissioners, it is recommended that the salary be increased from $3,000 to $4,000 per annum for the Health Officer, and that a Deputy Health Officer, with a salary commensurate with his duties, be appointed to act as Health Officer when necessity requires. Attention is also called to the fact that the clerical force of the department is inadequate, and an increase is recommended. It also recommends the appointing of a competent janitor in charge of the smallpox hospital and steam-disinfecting plant. An increase is recommended for the pound and disinfecting departments, to enable the latter to disinfect premises infected from disease. It also recommends an appropriation for abating nuisances and vaccinating the indigent portion of the community. The report closes with the important recommendation that the Health Department be provided with an up-to-date bacteriologic laboratory, and that ashes and sweepings be removed from private premises at public expense.

MILITARY HOSPITAL AT FT. MONROE.—Lieut-Col. Woodhull surgeon in charge, has reported to Gen. Sternberg, that a large military hospital building at Ft. Monroe, Va., will be ready for occupation within a few days. The hospital will contain 1000 beds, and is specially intended for sick soldiers returning from Porto Rico. Surgeon-General Sternberg is arranging for other winter hospitals to be located at points to be designated by a Medical Commission.

THE PRESIDENT INSPECTS FT. MYER HOSPITAL.—President McKinley recently made an inspection tour of the military hospital at Ft. Meyer, Va. He devoted several hours to the work, inspecting the wards containing about 400 sick, and then directed his attention to the culinary and commissary departments, personally inspecting the kitchen and food furnished the sick. He expressed himself as being perfectly satisfied with the management of the hospital.

RETURNED TO DUTY.—Drs. J. F. Moran, James D. Morgan, I. Bermann and G. C. Morris, have returned to the city after an extended vacation.

DISEASE SPREAD BY FLIES.—The scientific commission consisting of Majors Lee, Vaughn and Shakespeare, of the Medical Department of the Army, which has just concluded an inspection of several of the southern camps, has made a report to the War Department to the effect that flies were responsible to a large degree, for the prevalence of typhoid fever among the soldiers. The commission visited the camps at Jacksonville, Huntsville, Fernandina and Chickamauga, finding many cases of typhoid fever in each. After investigation the commission concluded that the fever had been brought in by the soldiers from their State Camps. The members are unanimous in the opinion that the flies, found by the millions in all the camps, were responsible for the prevalence of typhoid fever, and they present many facts to support this conclusion. In their report it is stated that the flies fed off the fecal matter

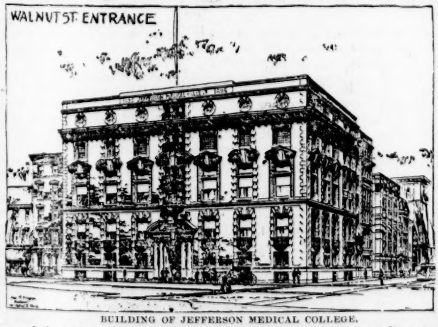
from the hospitals, and then at meal time shared the hard-tack and bacon of the soldiers. While feeding off the fecal matter of the hospital, the fly picked up on his hairy little feet infinitesimal particles containing the germs of typhoid fever and deposited them on the soldier's hard-tack and bacon.

Deaths from Leaky Gas Fixtures.—Quite frequently the coroner is called upon to investigate deaths resulting from gas-asphyxiation, and in many instances supposed cases of suicide are found to have met their death from gas escaping from defective brackets. It would seem that the proper authorities in Washington should hold somebody responsible for these preventable deaths, just as is done in the case of railroad accidents, explosions and other neglects. In the absence of such steps, it might be wise to require owners of property or tenants to keep gas fixtures, keys and pipes in perfect repair, thus limiting or lessening the deaths above cited.

Philadelphia.

School House Infected.—A few years ago several cases of diphtheria developed in the I. P. Morris School and nearly fifty persons contracted the disease. This disease has broken out in this building in previous years and a committee was appointed to investigate. It was first thought the disease was conveyed by drinking water, but this was subsequently proven not to be the case. The building has been arranged in its present condition by simply bringing two dwelling houses into one, and accommodates 300 children. Last year forty cases developed, nine of whom died, and an equal number have died during this latter epidemic. The teachers, at the first symptoms of the disease, dismiss the affected children in order that they may return home. Many parents very justly refuse to allow their children to attend this school, preferring to contend against the compulsory education law rather than risk exposing them to the contagion. The school will doubtless be closed. Fourteen cases have also been reported in two other districts of the city.

Jefferson Medical College.—Students of this institution next year will doubtless be at home in one of the handsomest medical colleges in the country. The site is immediately south



BUILDING OF JEFFERSON MEDICAL COLLEGE.

of the old college building, fronting Tenth and Walnut Streets, being 118 feet long by 110 feet deep, and the new building will be six stories high, of Italian Renaissance style and fire-proof.

Army Investigating Committee.—Dr. W. W. Keen, professor of surgery at the Jefferson Medical College, returned from Europe last week. During Dr. Keen's absence he was appointed by President McKinley a member of the Army Investigating Committee, but he has, after consideration, declined to accept.

Better Education for Physicians.—Since the passage of the law in Pennsylvania demanding a strict examination of applicants for those who desire to practice medicine in this State much good has been done toward elevating the profession and suppression of quackery, but there is a determination to raise the standard still higher. According to the act of May 18, 1893, governing the subject, one of the specifications was that a common-school education should be possessed by the applicants, including orthography, reading, writing, arithmetic, English grammar, geography, history of the United States, physiology and hygiene. The subjects of physiology and hygiene are to be assigned to the medical examining boards while the other branches will be transferred to and conducted by a committee consisting of persons connected with the public school system. It is stated that two preliminary examinations will be annually held in Philadelphia, one during the month of October, after the medical schools have opened, and the other preceding the final examination in June. Preliminary examinations will also be held in the Western part of the State on the same dates. The committee to take charge in Philadelphia will consist of the State superintendent of public instruction, the assistant superintendents of the schools of Philadelphia and several professors in this department. Answers to all questions are to be marked and kept on file in Harrisburg. It is stated that the Medical Council will accept as satisfactory evidence of a common school education permanent certificates issued by the school department of Pennsylvania, diplomas from colleges, normal schools and other institutions approved by the Council.

Huidekoper Resigns.—Dr. Rush Shippen Huidekoper, formerly of Philadelphia and until recently medical director at Chickamauga Camp, has been detached from his commission in Porto Rico. Dr. Huidekoper was graduated from the Department of Medicine, University of Pennsylvania, in 1877, and practiced medicine in this city, having an office at 111 South Twentieth Street. He has been foremost in establishing the Veterinary Department in the University, and lectured in that institution until 1888, when he resigned and went to New York, where he became lecturer in the New York Veterinary School. He was for eleven years connected with the National Guard of Pennsylvania as surgeon on the brigade and division staff commanded by General Snowden, and was with the troops during the Homestead riot. At present he is in Porto Rico.

Dr. John Ashhurst, Jr., professor of surgery at the University of Pennsylvania, while on his vacation at Overbrook, near Philadelphia, was attacked with a mild stroke of apoplexy. It was hoped at the time that he would sufficiently recover to resume his duties at the coming session, but it is now found that this will not be possible. The thousands of students who have gone out from the University will regret to hear of this unfortunate occurrence, for the feeling toward the Professor by all is one of profound respect. Besides his position in the University, he is surgeon to the University Hospital, Pennsylvania Hospital and Episcopal Hospital, and is now president of the College of Physicians of Philadelphia. At the approaching meeting of the Trustees of the University, it is supposed that Dr. Ashhurst will be relieved from duty for a sufficient period to recuperate and resume his chair at the University next year.

Mortality Statistics.—For the week ending September 24 there have been reported to the Board of Health a total of 376 deaths. This shows an increase of 14 over last week and 24 over the corresponding week of last year. Of the total number of deaths, 120 occurred in children under 5 years of age. The principal causes of death were: Nephritis, 19; cancer, 13; cholera infantum, 10; tuberculosis, 40; diabetes, 2; heart disease, 33; malarial fever, 1; inanition, 8; appendicitis, 4; marasmus, 31; old age, 11; suicide, 4; sunstroke, 1; uremia, 4.

Infectious Diseases.—This week: Diphtheria, 88 cases, 15 deaths; scarlet fever, 8 cases; typhoid fever, 255 cases, 15 deaths. Last week: Diphtheria, 99 cases, 17 deaths; scarlet fever, 15 cases, 1 death; typhoid fever, 366 cases, 15 deaths.

Most of these cases of typhoid fever occurred among the soldiers who had been brought to the city.

JEWISH HOSPITAL.—The thirty-third annual report of the Jewish Hospital has just been issued, and shows that during the year ending April 30 there were treated in the wards 736 patients and in the dispensary 11,754. The Hospital Association of which this Hospital is a part also includes the Mathilda Adler Loeb Dispensary, the Home for Aged and Infirm Israelites and the Lucien Moss Home for Incurables. The report states that by the death of Lucien Moss a legacy has been left amounting to $200,000 for the erection and maintenance of a home for incurables, to be known as the "Lucien Moss Home for Incurables of the Jewish Faith."

FOR FEDERAL QUARANTINE.—Owing to the cases of yellow fever recently reported in New Orleans and elsewhere, one of the leading papers here makes a strong plea for the establishment of Federal quarantine, stating that the injurious effects, not only to life but also to commerce, is a sufficient reason why the National Government should have absolute control over all quarantine matters. The article then recites the experience of quarantine by local boards of health, shotgun quarantine, etc., and suggests the old idea that the whole matter be transferred to the Marine Hospital Service, which could then manage epidemics of this disease without interference by State or county officials.

CONDITION OF THE SOLDIERS IN PHILADELPHIA HOSPITALS.—At the present time there are about one thousand soldiers being treated in the different hospitals of this city. Three deaths have occurred at the Pennsylvania Hospital within the past few days, and of the 110 soldiers still present in that institution several are yet in a critical condition. This Hospital has cared for upward of two hundred soldier patients and these deaths are the first yet reported.

DRS. BOARDMAN REED and ALBERT ROUSSEL have both returned from Europe.

DR. LAURENCE TURNBULL, who has been for several months at his summer home in Florida, has returned much improved in health.

DR. S. WEIR MITCHELL, who is now in Bar Harbor, and Dr. Edward P. Davis, now at Marion, Mass., are both expected home about October 1.

DRS. JOSEPH PRICE, W. S. STEWART and JOHN B. DEAVER, have been in attendance at the meeting of the American Association of Obstetricians and Gynecologists recently held in Pittsburg.

MORE SOLDIERS.—On the 18th the government transport *Missouri* transferred from Montauk Point 300 sick soldiers to the hospitals of this city. On a subsequent day 126 soldier patients were received by them. The Red Cross Society has been quite active recently and, up to date, has sent out four trains for the purpose of bringing the soldiers here for treatment.

BEQUEST.—Mr. Lowber Welch, a wealthy citizen of this place and president of the Union Traction Company, recently sent the following letter to the officials of the Episcopal Hospital: "Gentlemen: My son, Charles N. Welsh, seriously injured seven weeks ago, and being pronounced out of danger by his physicians, it is my wish to commemorate this blessing and to that end inclose my check to your order for $500 to establish a free bed in your hospital for the benefit of ill or injured men while in the service of the Union Traction Company."

CHANGE OF ADDRESS.

Brown, R. W., from Glenwood, Wis. to Nipamo, Cal.
Clay, W. P., from Elgin to Meadon, Ohio.
Dietermann, O. O., from 623 W. Town to 742 S. High, Columbus, O.
Hoff, A. F., from Des Moines, Ia. to Casper, Wyo.
Holmger, J., from 314 Sedgwick to Schiller bldg, Chicago, Ill.
Hotvedt, L. J., from 942 21st Ave. So. to 1819 2½ Street So., Minneapolis, Minn.
Jones, J. D., from Newburg to 1631 Howard St., Cleveland, O.
Pritchett, C. W., from Keeling to 1031 Main St., Danville, Va.
Plummer, R. W., from Tyrone, Pa. to Journal bldg, Chicago, Ill.
Rodman, W. L., from Louisville, Ky. to Medico-Chirurgical College, Philadelphia, Pa.
Ross, T. D., from Stockton to Santa Rosa, Cal.
Sites, J. McKee, from Upper Tract to 359 W. Burke St., Martinsburg, O.
Sale, E. F., from Masonic Temple to Southern Express bldg, Memphis, Tenn.
Truax, Greene & Co., Chas., on or before November 1 will remove to their new building, 42, 44 and 46 Wabash Ave., Chicago, Ill.
Town, M., from 131 N. Clark to 268 E. North Ave., Chicago, Ill.
Wilson, G. H., from 50 to 176 Euclid Ave., Cleveland, O.
Winn, C. S., from 432 W. 71st to Byron, O.
Williams, C. C., from Brighton, Mass. to 1396 Winfield St., Los Angeles, Cal.
Wolfe, L. E., from Beavertown to Kinzers, Pa.
Wittle, M. E., from Mt. Pleasant, Ia. to Clarinda, Ia.

LETTERS RECEIVED.

Ayers, S. C., Cincinnati, O.; Allen & Hamburys, Ltd., New York, N. Y.; Alma Sanitarium Co., Alma, Mich.
Baker & Co., Walter, Boston, Mass.; Bailey, S., Mt. Ayr, Ia.; Black, J. F., Springfield, Mass.; Brabham, W. S., Poplar Bluff, Mo.; Brown, F. F., New York, N. Y.; Bentz, H. G., Buffalo, N. Y.
Clements, Jos., Kansas City, Mo.; Curtis, F. C., Albany, N. Y.; Cheney, J. V., Chicago, Ill.; Cook, G. F., (2) Oxford, O.
Dunham, W. R., Keene, N. H.; Dios Chemical Co., St. Louis, Mo.
Evans, A. H., Saxton, Pa.; Economy Sign Works, Chicago, Ill.
Fuller's Advertising Agency, C. H., Chicago, Ill.; Fairchild Bros. & Foster, New York, N. Y.; Fairbank Company, The N. K., Chicago, Ill.; Farbenfabriken of Elberfeld Co., New York, N. Y.
Goode, C. A., Traverse City, Mich.; Gordon, N. R., Springfield, Ill.
Hobart, J. P., Cincinnati, O.; Hoy, J. Emory, Philadelphia, Pa.; Hartshorn, W. E., Minneapolis, Minn.; Hekoten, L., Chicago, Ill.; Hare, H. A., Philadelphia, Pa.; Haynes, E. E., Memphis, Tenn.; Hummel Adv. Agency, A. L., New York, N. Y.; Huber, G. C., Sec., Ann Arbor, Mich.; Harmon, Julia, Warren, O.; Hill, Chas. Erwin, Chicago, Ill.
Jerome Kidder Mfg. Co., New York, N. Y.
Kellogg, J. H., Battle Creek, Mich.; Kempson, J. F., New York, N. Y.; Kemp, L., Bucyrus, O.
Long, Le Roy, Caddo, I. T.; Lippart, Freida E., New York, N. Y.; Loeb, H. W., St. Louis, Mo.
Mariani & Co., New York, N. Y.; Malt-Diastase Co., New York, N. Y.; Murray, N., Baltimore, Md.; Memphis Lancet, Memphis, Tenn.; Miller, E. C., Rockwell, Ia.; May, C. H., New York, N. Y.; Merrick, M. B., Passaic, N. J.; Mayer, Emil, New York, N. Y.; Malmsbury, J. O., Peru, Ind.; Moore, W. A., Hindsville, Ark.; Maxey, E. E., Caldwell, Idaho; Murphy, J. B., Chicago, Ill.
Nelson, L., Hillsboro, O.; Newell & Heldman, Chicago, Ill.; Newell, E. D., King, La.; New York Post Graduate Medical School & Hospital, New York, N. Y.; National Vaccine Establishment, Washington, D. C.; Norwich Pharmacal Co., Norwich, N. Y.
Oakland Chemical Co., New York, N. Y.; Olmstead, D. S., Millersburg, O.
Perkins, P. M., Kansas City, Mo.; Pasteur Vaccine Co., New York, N.Y.
Reed, W. W., Fowler, Colo.; Rosenberry, A. J., Oak Park, Ill.; Rogers, John, New York, N. Y.; Riley, W. H., Boulder, Col.
Seabury & Johnson, New York, N. Y.; St. Charles Condensing Co., St. Charles, Ill.; Stearns, F. & Co., Detroit, Mich.; Schering & Glatz, New York, N. Y.; Sutton, R. Stansbury, Pittsburg, Pa.; Scheppegrell, W., New Orleans, La.; Stuver, E., Rawlins, Wyo.; Saunders, W. B., (2) Philadelphia, Pa.; Scott & Bowne, (2) New York, N. Y.; Smith, Lewis P., Bedloes Island, N. Y. Harbor; Sheldon, C. S., Madison, Wis.; Shelby, Mary C., Lexington, Ky.; Smith, M. M., Austin, Texas.
Thorpe, A. C., San Gabriel, Cal.
Watts, C. W., Moberly, Mo.; Wheeler, Jno., Penileton, Ore.; Wells, E. F., Chicago, Ill.; Winn, J. F., Richmond, Va.; Whitford, Wm., Pittsburg, Pa.; Wallace, John, Milton, N. H.; Woldert, E. A., Philadelphia, Pa.; Wampole, H. K. & Co., Philadelphia, Pa.

THE PUBLIC SERVICE.

Movements of Army Medical Officers.—To duty at Camp Wikoff, Montauk Point, L. I.: Major John M. G. Woodbury, chief surgeon of volunteers.

From Camp Wikoff, Montauk Point, L. I., to Santiago, Cuba: Acting Asst.-Surgeon E. Nunez. To Ponce, Porto Rico, the following acting asst.-surgeons: J. F. Hadley, H. B. Mohr, Charles D. Camp, H. P. Jones, F. M. Barney, Robert Boyd, S. W. Perry, Stephen M. Gonzales, Charles A. Hamilton, Charles J. Kenworthy, S. H. Wadhams, E. F. McClendon, Charles E. McDonald, Wm. M. Carson, William C. LeCompte, John J. Gilhuley, Elmer S. Tenney, E. C. Shattuck and W. W. O. Cutliffe. To duty with troops at Jacksonville, Fla.: Major Royce D. Fry, brigade surgeon, and Acting Asst.-Surgeon Ed. C. Poey. To duty with troops at Amiston, Ala.: Major Samuel W. Kelly, brigade surgeon. To New Orleans, La.: Acting Asst.-Surgeon Geo. B. Lawrason. To Mobile, Ala.: Acting Asst.-Surgeon George H. Fonde. To Jefferson Bks., Mo.: Acting Asst.-Surgeon Llewellyn E. Williamson. To Ft. McHenry, Md.: Major L. W. Crampton, Surgeon U. S. A.

To duty with troops in Porto Rico, the following acting asst.-surgeons: Louis L. Gilman from New York City, W. G. Young from Camp George H. Thomas, Ga., E. L. Griffin from Ft. Barrancas, Fla., and Robert F. Jones from Washington, D. C.; also Lieut. Weston P. Chamberlain, Asst.-Surgeon U. S. A., to take charge of medical supplies on the *Panama* at Newport News, Va., and to return from Porto Rico with convalescents.

To duty with troops at Knoxville, Tenn.: Acting Asst.-Surgeon Geo. Dock from Camp George H. Thomas, Ga.

To duty with troops at Camp Hamilton, Lexington, Ky.: Acting Asst.-Surgeons Baen Street from Camp Hobson, Lithia Springs, Ga., and Francis E. Holliday from Washington, D. C.

To Plattsburg Bks., N. Y.: Acting Asst.-Surgeon James Reagles from Newport News, Va.

To New York City: Acting Asst.-Surgeon Charles Brewer from Ft. Monroe, Va.

To Atlanta, Ga., to establish a medical purveying depot: Major Ed. T. Comegys from Camp George H. Thomas, Ga.

Honorably discharged: Lieut.-Col. Nicholas Senn, chief surgeon; Majors Charles B. Nancrede, Geo. A. Smith and Nicholas H. Henry, chief surgeons, and Major Charles Adams, brigade surgeon.

Resigned: Major Julian La Pierre, 3d Connecticut Infantry.